WIRE AND WIRE PRODUCTS

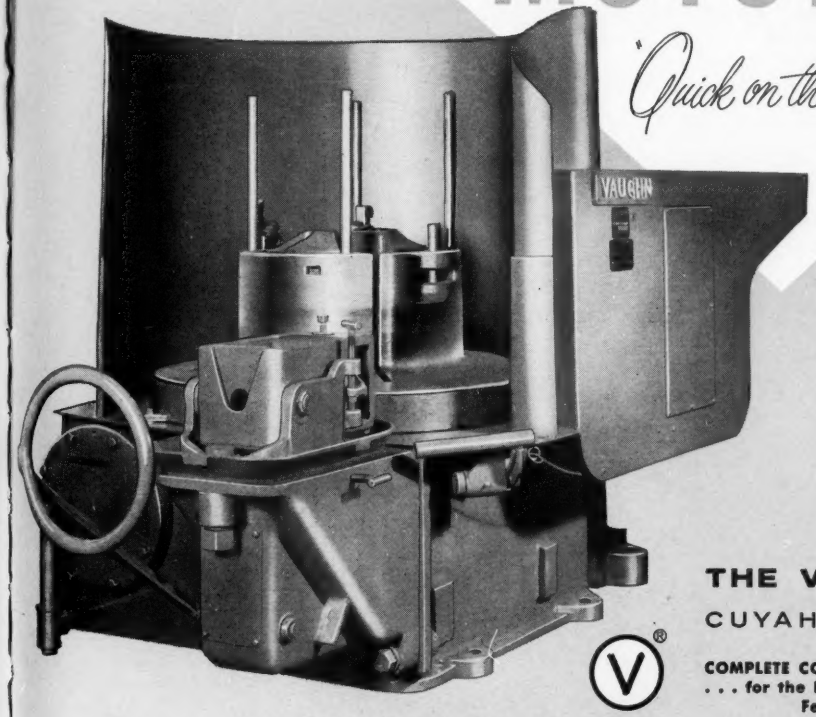
JULY 1956

FOR ROD FROM 1¼" DIAMETER
DOWN THROUGH TO #5

Versatile
and DEPENDABLE
—air and water-cooled!

Vaughn®
MOTOBLOC®

"Quick on the Draw!"



What you *have* to draw, Vaughn MOTOBLOC will handle! This universally-used equipment has the oversized strength and stamina needed for your toughest assignments, plus the built-in longevity that assures high return on your investment over many years. • Only *Vaughn* builds MOTOBLOC, available in single or double deck types, air and/or water-cooled, or with push-up type blocks. Horizontal, vertical or inverted versions of this same basic machine. Do you have our latest descriptive bulletin?

THE VAUGHN MACHINERY CO.
CUYAHOGA FALLS, OHIO, U. S. A.

COMPLETE COLD DRAWING EQUIPMENT—Continuous or Single Hole . . . for the Largest Bars and Tubes . . . for the Smallest Wire . . . Ferrous, Non-Ferrous Materials or their Alloys

OFFICIAL PUBLICATION OF THE WIRE ASSOCIATION

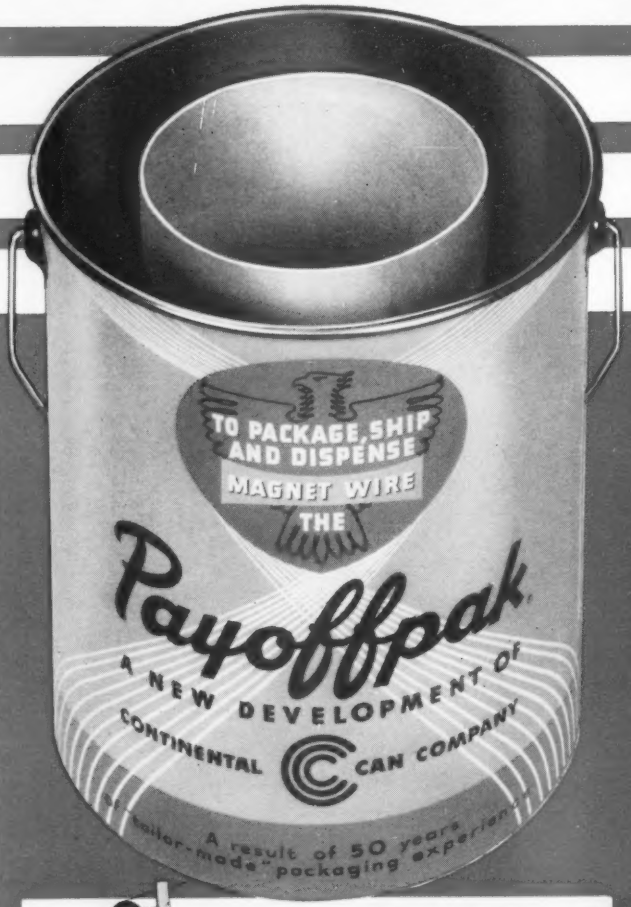
NOW Continental's Payoffpak® is also available in STEEL

EASY LOADING

EASY DISPENSING

EASY STACKING

AIRTIGHT



Up to 100 pounds of fine wire—ferrous or non-ferrous—can be fed into a Payoffpak steel pail as fast as it's drawn or annealed. Gone are all those laborious operations of splitting, tying and wrapping! Continental's wire-carrying pails are tailor-made for this purpose, with sturdy bail, smooth, slick interior, and necked-in bottom for secure stacking. Lithographed by Continental's master lithographers, they do a real selling job for you—yet they're priced for one-time use. Write, wire for quotations.

The Payoffpak system is the easiest, cheapest way to pack, ship, store and use fine wire. No need of reels or wide range of block sizes in filling . . . longer length of continuous strand means reduced down-time for your customers.

Lug cover with gasket gives true airtight seal!

CONTINENTAL CAN COMPANY

Eastern Division: 100 E. 42nd St., New York 17
Central Division: 135 So. La Salle St., Chicago 3
Pacific Division: Russ Building, San Francisco 4

The Best is Cheapest

in the long run!

USE

"America's Finest Wire Drawing Lubricants"

MAY WE HELP YOU?

SERVICE CENTERS

JOHN A. MORITZ, Pres., Frankfort, Illinois.

EARL BOWERS, Vice Pres., 66 Dolphin Drive, St. Petersburg 6, Florida.

ARTHUR J. O'MARA, c/o Standard Industrial Compounds Co., Millbury, Mass.

BRUCE SIEMON, 2400 Morrow Place, Pittsburgh 34, Pennsylvania.

GEORGE SLOAN, Frankfort, Illinois.

KENT BOSWORTH, 416 Manhatten Road, Joliet, Illinois.

621 TOPS FOR NAILS

◄ NEW ►

"Q" FOR PLATING QUALITY

Standard Industrial has pioneered in most of the outstanding contributions to better wire drawing through better lubricants. Consult Standard Industrial for the solution of your difficult problems.

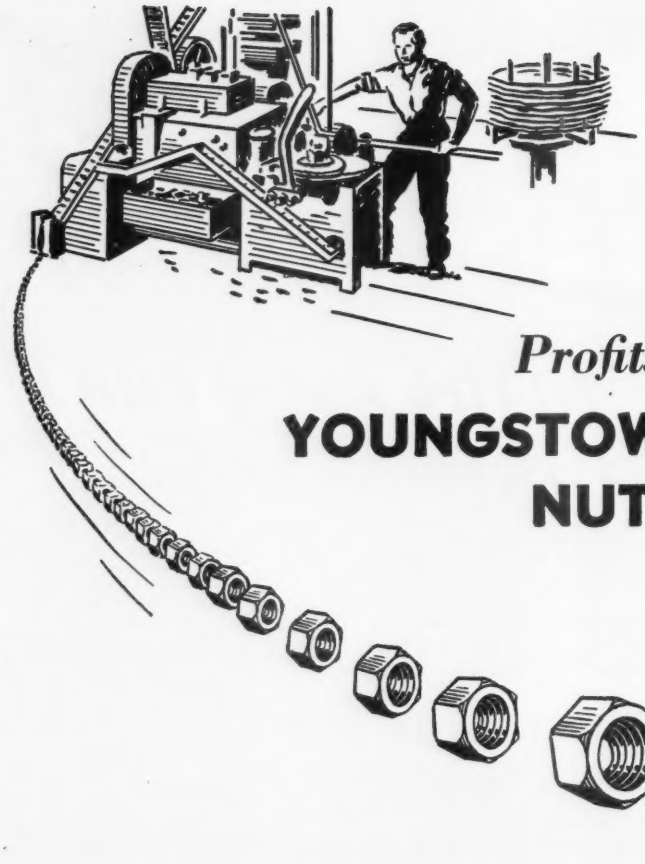
Standard Industrial

COMPOUNDS CO., INC.

FRANKFORT, ILLINOIS

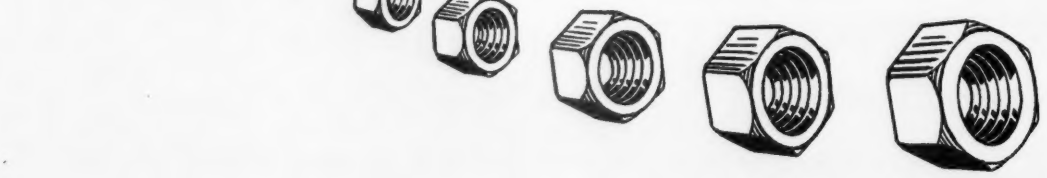
(A suburban Chicago area city)

Telephones: 2131-2141



Profits rise when you put

YOUNGSTOWN SCRAPLESS NUT WIRE *on the job!*



"Production up — rejects down which increased our over-all profit." We hear this story over and over from leading cold heading operators who specify and rely on Youngstown Scrapless Nut Quality Wire. It comes to your shop free from all piping, injurious seams, laps, die marks, internal tearing and cupping, and non-metallic inclusions —all of which defects skyrocket your reject rate.

Remember, because Youngstown controls all its processes, from ore mining to bundling of the finished wire, it's your guarantee for a continuous production of high quality, brightly polished nuts. Its smooth, strong coating prolongs die life thus minimizing costly die replacements.

Youngstown Scrapless Nut Quality Wire is immediately available in standard AISI as well as special resulphurized steels. Also, Cold Heading Bolt Wire, of the same high Youngstown quality, is supplied in all standard carbon analyses. Phone or write today to our nearest District Sales Office for any additional help or information.

Youngstown

QUALITY V YOUNGSTOWN SERVICE

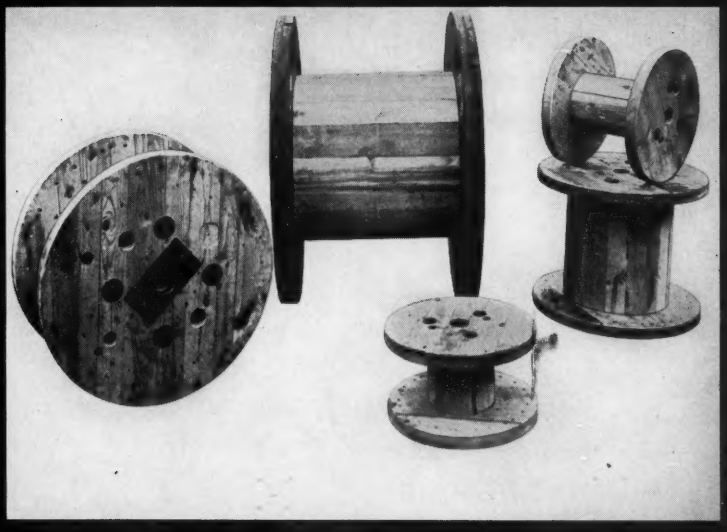
SCRAPLESS NUT QUALITY WIRE

THE YOUNGSTOWN SHEET AND TUBE COMPANY *Manufacturers of Carbon, Alloy and Yoloy Steel*

General Offices Youngstown, Ohio District Sales Offices in Principal Cities.

SHEETS - STRIP - PLATES - STANDARD PIPE - LINE PIPE - OIL COUNTRY TUBULAR GOODS - CONDUIT AND EMT - MECHANICAL TUBING - COLD FINISHED BARS - HOT ROLLED BARS - WIRE - HOT ROLLED RODS - COKE TIN PLATE - ELECTROLYTIC TIN PLATE - BLACK PLATE - RAILROAD TRACK SPIKES - MINE ROOF BOLTS

use
NON-RETURNABLE
wood
reels
for
all
sizes
and
types
of
electric
wire
and
cable



SHIP the modern way!

LOOK! at the ADVANTAGES

- *REDUCED REEL INVESTMENT*
- *LESS STORAGE SPACE REQ'D.*
- *LOWER FREIGHT COSTS*
- *NO BOOKKEEPING*
- *NO REPAIR COSTS*
- *NO CASH DEPOSITS REQ'D.*
- *NO RETURN FREIGHT COSTS*
- *NO MORE HEADACHES ! ! !*

NON-RETURNABLE REELS GIVE YOU A DEFINITE PACKAGING COST

HIGH SPEED

SHIPPING SERVICE in our . . . OWN TRUCKS

within a radius of 200 miles from the plant. Fast freight will bring you Bridge reels in 5 days or less east of the Mississippi.

BRIDGE
MANUFACTURING COMPANY
HAZARDVILLE, CONNECTICUT

Telephone . . .
Thompsonville, Connecticut
RIverview 9-8308

"REEL GOOD . . .

Let us quote on your reel needs. Send your specifications. Better yet, visit our plant and see how and why our reels are made so well at so low a cost.

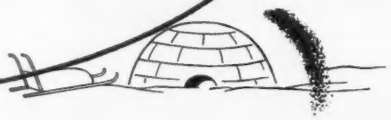
WOOD REELS"

DRAW IT FAST

No-slip storage principle and air-cooling permit speedy drawing.

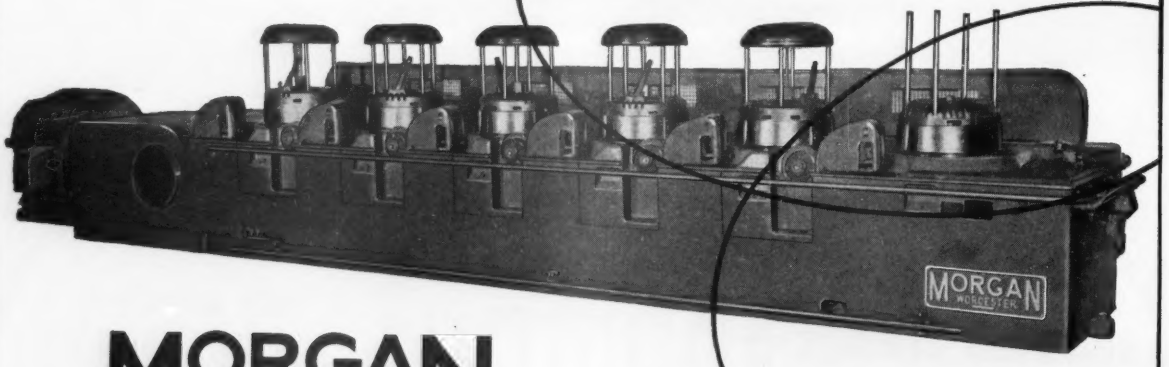
DRAW IT COLD

Exclusive air-cooling method removes heat from wire—insures meeting exacting specifications.



DRAW IT ON MORGAN-CONNOR

WIRE DRAWING MACHINES



MORGAN WORCESTER

Write for details to:

WM-92

Morgan Construction Company WORCESTER, MASS.

ROLLING MILLS • MORGOIL BEARINGS • REGENERATIVE FURNACE CONTROL • EJECTORS • GAS PRODUCERS

WIRE AND WIRE PRODUCTS*

Reg. U. S. Pat. Off.

A monthly publication devoted to the production of Wire, Rod and Strip, Wire and Rod Products and Insulated Wire and Cable.

DRAWING — ROLLING — EXTRUDING — FORMING — FABRICATING

Vol. 31 July, 1956 No. 7

Designated as Official Publication By The Wire Association

Contents

Wire Association Annual Convention Program 742
Editor's Desk 761
Six Advantages of Wire in Product Design By T. W. Whipple 763
A S & W Places New Rod Mill in Operation At Its Cuyahoga Works 765
Improved Polyvinyl Chloride Insulation for 105°C Service By B. W. Hodges, J. L. Foster & H. L. Wuerth 768
Steel Cable Reel Repair Demonstration 771
Wire Packaging Method Cuts Shipping Costs 774
Nail Packaging Method Increases Sales By Webster Brumbaugh 775
Precision Spring Manufacturer Employing Electronic Controls By H. H. Passolt 777
Pioneers of The Past, Washburn - Moen - Rice 779
Vaughn Machinery Celebrates Century of Progress 781
Government Wire Production Information 783
Outstanding Personalities of the Wire Industry 793
Copper Statistics 798
Non-Ferrous Metal Statistics 801
A Review of Recent Wire Patents 805
Aluminum Statistics 807
Steel Statistics 809
Index to Advertisers 827
Where-To-Buy 828-832

WIRE and WIRE PRODUCTS is Indexed regularly by Engineering Index, Inc., New York, N. Y.

RICHARD E. BROWN, President and Publisher

R. S. Spengel, Secy.-Treas. & Gen'l. Manager
J. Edward Donnellan, Vice-President

Edmund D. Sickels, Editor

— ASSOCIATE EDITORS —
Lancaster, Allwine & Rommel, Consultants on Patent Information

Publication Office: Jersey City, N. J.
Executive Office: 453 Main St., Stamford, Conn.
*Reg. U. S. Pat. Off.

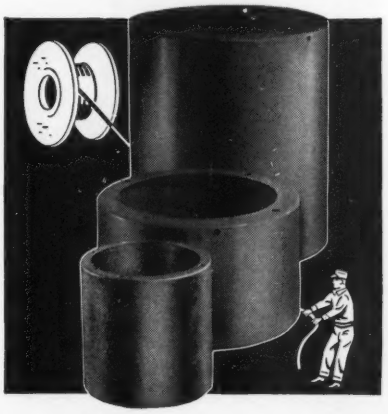
WIRE & WIRE PRODUCTS, Vol. 31, No. 7, July, 1956. Publication Office at One Sherman Avenue, Jersey City, N. J. Executive Office 453 Main Street, Stamford, Conn. Published monthly by the Quinn-Brown Publishing Corp., Richard E. Brown, President; R. S. Spengel, Sec'y and Treas. Subscription Price: U. S. $8.00; Canada, $8.00 per year; Domestic 75 cents per copy; Foreign 90 cents per copy, except October Convention Issue and January Proceedings Issue, $1.25 per copy; Foreign $10.50 per year. Entered as second class matter at the Post Office, Jersey City, N. J. under the act of March 3, 1879.

Copyright, 1956 Quinn-Brown Publishing Corp.

Scott Printing Company, Jersey City 7, New Jersey

REPUBLIC

FLANGED STEEL TRAVERSES



are:

1. Light in weight
2. Durable
3. Strong
4. Easy to assemble
5. Smooth—free from rough spots that might damage plastic-covered cable.

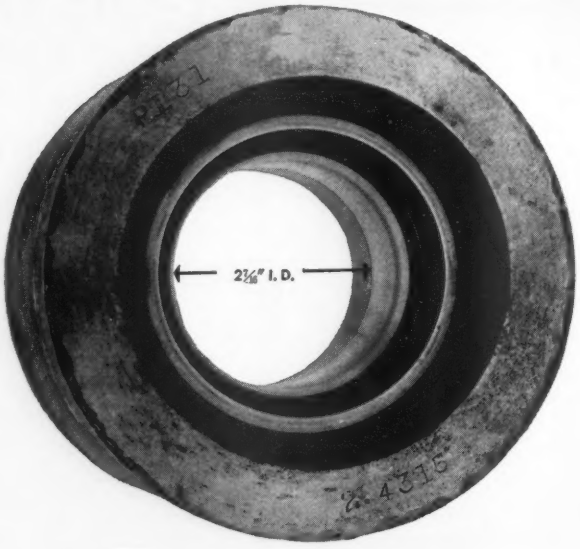
Made in sizes up to 56-inch diameter and 48-inch traverse—in plain, painted or hot dip galvanized finish—as light as 18-gage steel. Width of flange and number of bolt and drain holes furnished to your specifications. Available for prompt delivery. Write for prices.

* * *

REPUBLIC STEEL CORPORATION
Pressed Steel Division
6102 Truscon Avenue, Cleveland 27, Ohio

☐ Please send more information on Republic Flanged Steel Traverses.

Name_____ Title_____
Company_____
Address_____
City_____ Zone____ State_____
C-1452



Carboloy R-16 Die
operated 26 months
without polishing

Over 5,000 tons of steel were drawn by this R-16 die in 26 months . . . without developing an approach wear ring. During that time, the 2.4315" hole increased only .0025"—about one-tenth of 1 percent. (R-16 die shown one-half size.)

Carboloy R-3 Die
resized 20 times . . .
to 30% over maximum

Before its first resize, this R-3 die had already drawn more wire than its user expected on the first size. After its 20th resize, the die was still producing high-quality wire—with a hole 30% larger than normally recommended maximum. (R-3 die shown full size.)

THERE IS NO "NORMAL" SERVICE LIFE FOR CARBOLOY WIRE DIES

There's no such limit as "normal" service life with Carboloy® Wire Dies. Time and again, mill records prove these dies deliver far more than is expected.

Outperform other carbide dies

The R-16 die, at left, drew more than 5,000 tons of solid bar stock before it required polishing . . . breaking all previous carbide drawing records at Wyckoff Steel Company.

The story of the R-3, at right, is equally impressive in terms of effective service life. When the die was finally retired, the original .025" hole had been resized 20 times. The final .236" hole was 30% larger than the maximum .182" normally recommended—yet wire quality was maintained.

Get these "bonus" services

1. On-the-job engineering service
2. Immediate local delivery
3. Available die servicing facilities

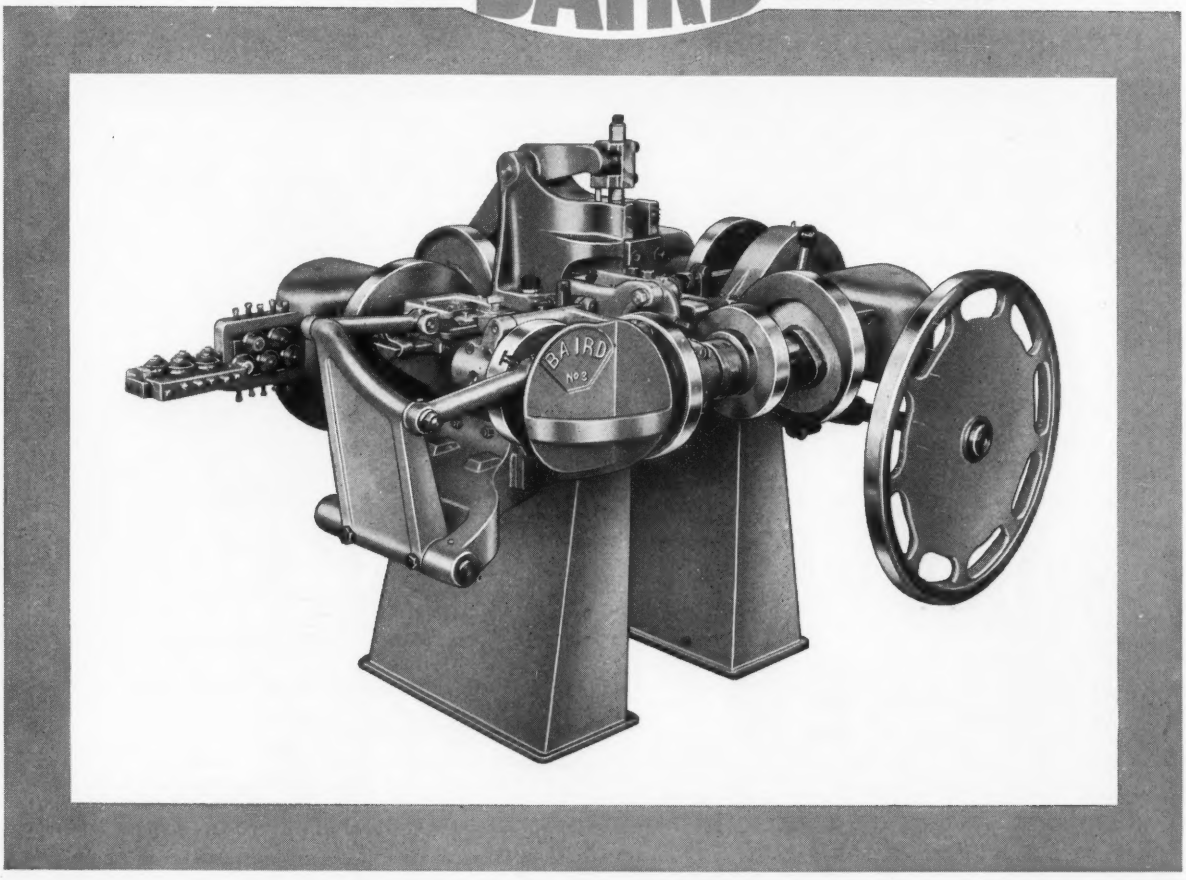
Whether your business is drawing, flattening, extruding, or heading, there's a Carboloy product to fit your needs. For more information, or in-plant assistance, write today.

"Carboloy" is the trademark for products of the Carboloy Department of General Electric Company

CARBOLOY
DEPARTMENT OF GENERAL ELECTRIC COMPANY
11171 E. 8 Mile Road, Detroit 32, Michigan

Carboloy Created-Metals for Industrial Progress

...ask BAIRD about it



The "hidden bargain" in a BAIRD Four-Slide

Thousands of Baird Four-Slide users . . . making everything from auto seat springs to bobby pins . . . say it isn't hard to find.

The "hidden bargain" is the cost-reduction know-how that goes along with every machine sold.

Baird pioneered the four-slide machine as the basic round and ribbon wire forming equipment used by every industry making such products. Baird has the most extensive experience files on tooling for this most versatile of high production equipment. Usually the problem that seems tough to the customer can be matched to a previous successful Baird application . . . thereby saving time and money in tooling.

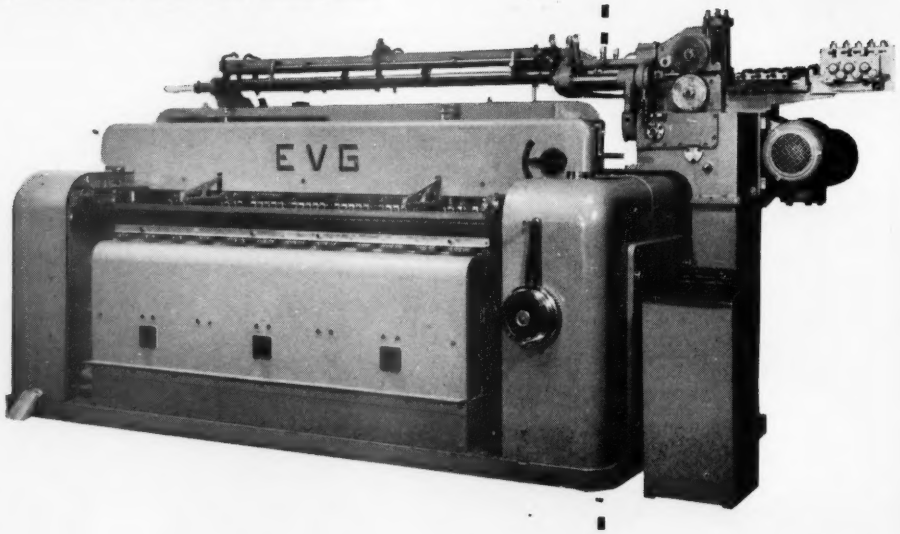
With such a reservoir of past practical experience to draw upon, it's always good business to "ask Baird about it" when a four-slide application is being considered. Our range of standard automatic wire forming machines is complete, from the "bench top" No. 00 (400 lbs.) to the "room size" No. 8 (12,000 lbs.) . . . also two standard sizes of ribbon metal forming machines. Bulletin on request. Write Dept. WP.

AUTOMATIC MACHINE TOOLS • AUTOMATIC WIRE & RIBBON METAL FORMING MACHINES • AUTOMATIC PRESSES • TUMBLING BARRELS

THE BAIRD MACHINE COMPANY
STRATFORD CONNECTICUT

1BA56

Shown in Picture: The UNIVERSAL (Model G5); available in 96", 128" and 156" widths. Recommended for Road Fabric, Building Mesh.



Fully Automatic

EVG

WIRE FABRIC WELDING EQUIPMENT

EVG, Europe's experienced builders of Wire Fabric Welding Machines, have developed a series of fully automatic, high-speed precision fabric welders. Specialized machines are available to produce each major type and size of welded mesh—from the heaviest to the lightest—suitable for reinforced concrete pipe, road slab, building mesh, fencing, hardware cloth, etc.

Wire sizes from 1/2" dia. down to 22 ga. Wire spacings from 1/2" x 1/2" upward, including all standard constructions. Speeds up to 90-100 cross wires per minute. Get the full facts today.

Engineered and Built by

ENTWICKLUNGS VERWERTUNGS GESELLSCHAFT

Graz, Austria

MASCHINEN & STAHL A.G.

Zurich, Switzerland

Please direct inquiries to

RICHARD E. KLEINHANS

Authorized Representative in the United States

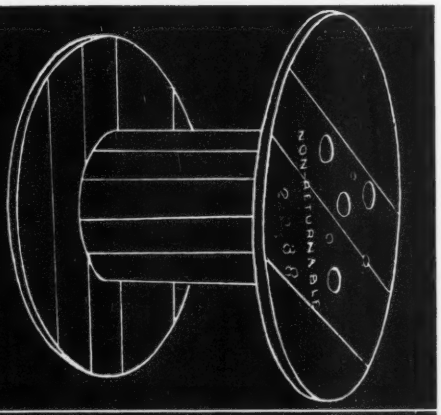
122 East 42nd Street, New York 17, N. Y. • OXford 7-0770 – 7-0771

Three TO MAKE MONEY

the NARCO NON-RETURNABLE

- AN EXPENDABLE PACKAGE
- LIGHT IN WEIGHT

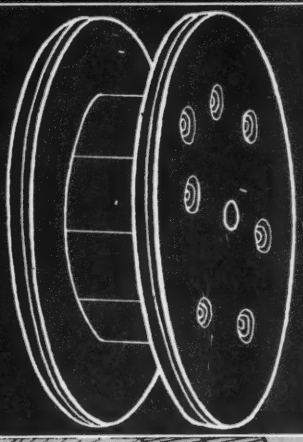
LOW IN COST
NO MAINTENANCE



the NARCO METAL BOUND

- THE QUALITY REEL THAT **LASTS** AND **LASTS** AND **LASTS**
- **FOUR** TO **SIX** TIMES THE LIFE OF ALL WOOD REELS

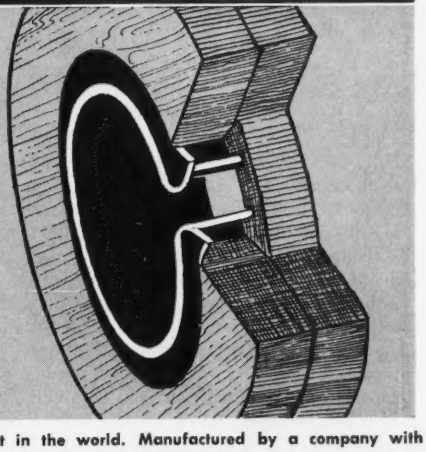
NO MAINTENANCE



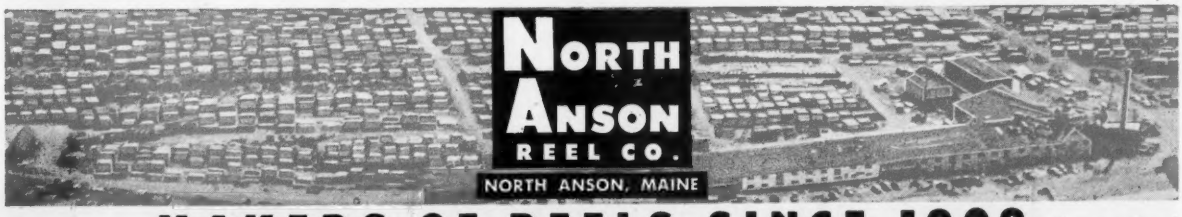
the NARCO SPLIT BUSHING

- REPLACES COSTLY HUB PLATES AND CASTINGS

LOW IN COST
NO MAINTENANCE



Remember These are products of the most modern up-to-date reel plant in the world. Manufactured by a company with nearly 50 years experience and a background of exhaustive testing and research in the laboratory and the field.



• • • • MAKERS OF REELS SINCE 1909 • • • •

Worker at Electra Insulation Corporation checks braided Fiber Glass coming from braider making large size tubing. This insulated product is used to protect wiring in applications ranging from precision machinery and automobile distribution systems to television sets and electric toasters.

"We cut production costs 3 ways with Pittsburgh Fiber Glass"

SAYS MR. OTTO C. AMENT

Head of Purchasing Department

Electra Insulation Corporation, Woodside, N. Y.

Mr. Otto C. Ament, shown here inspecting finished tubing, says: "Fiber Glass makes it possible for us to design a modern, quality insulated sleeving tubing and braid."

"Fully 90% of our present production of braid, sleeving and tubing involves the use of Fiber Glass Yarn," says Mr. Ament. "By switching to Fiber Glass from the material we previously used, we obtained three-way advantages.

"First, Fiber Glass was much less expensive. Second, with Fiber Glass the quality of our electrical insulation was substantially improved. Third, the improved quality has opened vast new applications for our tubing, sleeving and braid."

Electra Insulation Corporation also found that Fiber Glass, compared with other material, withstands a wider range of temperature variation (from —65°C to plus 200°C), has higher resistance to deteriorating organic substances, can easily be made fungus-proof, and . . . best of all . . . the use of a basic Fiber Glass braided tubing permits the application of superior insulating impregnants and coatings to produce Electra's Vinylglas, Silicone Resin, Silicone Rubber, Isotube and Oleoresinous Varnish Tubing insulators.

Many Fiber Glass braided specialties have also been developed by Electra Insulation for industrial, domestic and military applications. Insulating braids which will withstand 1600°F have been produced with Fiber Glass yarn.

WHAT CAN PITTSBURGH FIBER GLASS DO FOR YOU?

Pittsburgh Fiber Glass Yarns are made of exceptionally uniform, continuous filaments, twisted and plied for any build-up. Why not arrange some tests through our executive or district sales offices? *Pittsburgh Plate Glass Company, Fiber Glass Division, One Gateway Center, Pittsburgh 22, Pennsylvania.*

PITTSBURGH FIBER GLASS YARN IS A PRODUCT OF THE FIBER GLASS DIVISION OF PITTSBURGH PLATE GLASS COMPANY

Sales Offices are located in the following cities: Charlotte, Chicago, Cincinnati, Cleveland, Detroit, Houston, Los Angeles, New York, Philadelphia, and St. Louis

FIBER PG GLASS

PAINTS • GLASS • CHEMICALS • BRUSHES • PLASTICS

PITTSBURGH PLATE GLASS COMPANY

"These *Payoffpaks* of CHASE® wire sure cut our wire forming costs!"

NOW you can form miles of wire with no costly down time

In this new PAYOFFPAK you get a continuous length of Chase copper alloy wire up to a total of 400 to 500 pounds in weight.

This extremely long wire length cuts to a minimum the amount of time lost in setting up a wire-forming machine, permits more continuous operation, reduces scrap loss. The Payoffpak is safe to use, easy to store ... cuts down on stock space.

In transit and storage, the Payoffpak protects the clean, smooth surface of Chase wire from rough and tumble handling. Your Chase wire comes out as bright and free of kinks as the day it was made.

Check with your Chase Wholesaler or nearest Chase Warehouse about getting your next shipment of wire in the new Payoffpak.

Chase®

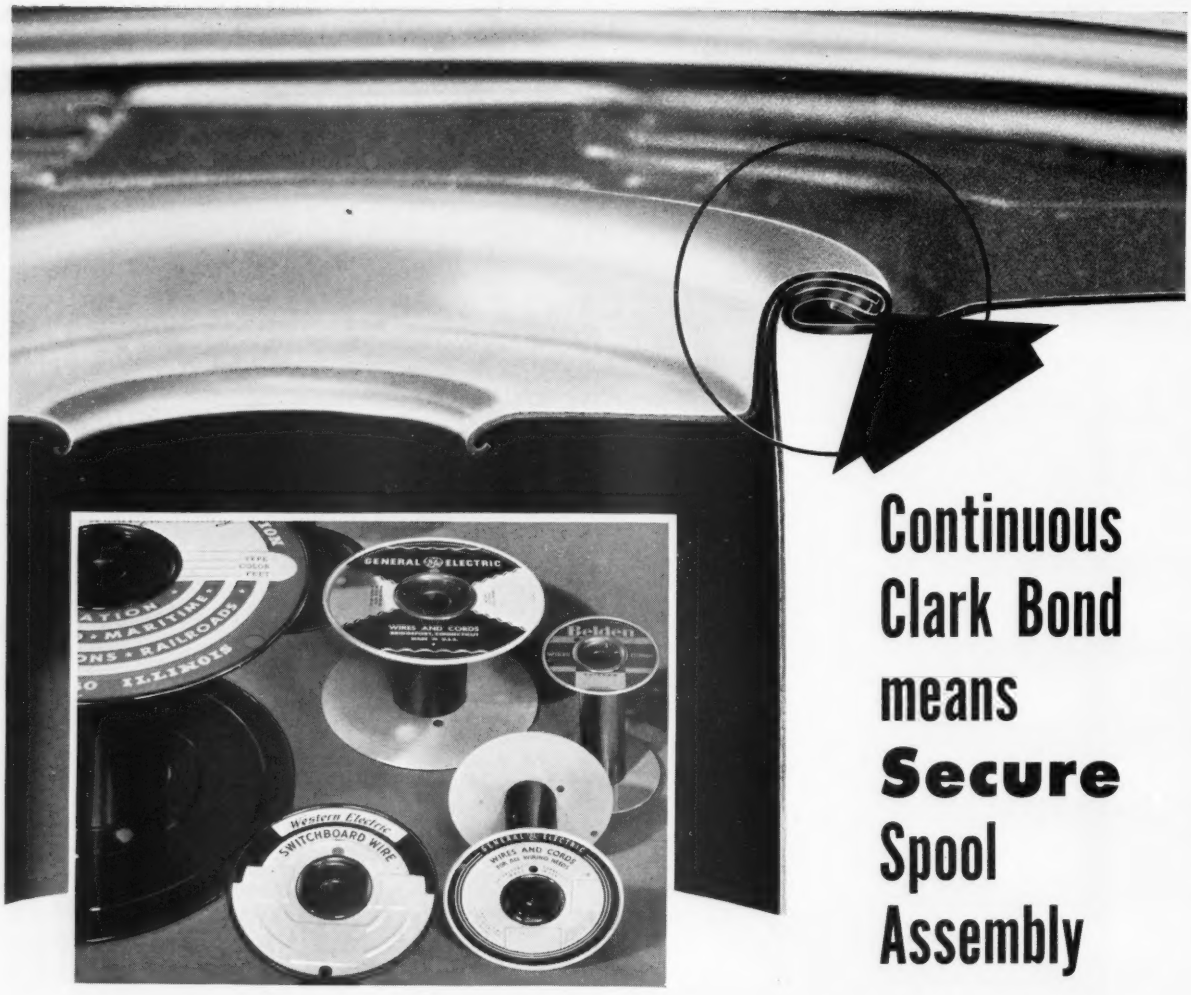
BRASS & COPPER CO.

WATERBURY 20, CONNECTICUT • SUBSIDIARY OF KENNECOTT COPPER CORPORATION

NEW! Chase's informative wire and rod movie: "IN THE CHIPS." Arrange for a free loan of this film by contacting the Chase warehouse or sales office near you. Write on your company letterhead, today!

The Nation's Headquarters for Brass, Copper & Stainless Steel

Atlanta, Baltimore, Boston, Charlotte, Chicago, Cincinnati, Cleveland, Dallas, Denver, Detroit, Grand Rapids, Houston, Indianapolis, Kansas City, Mo., Los Angeles, Milwaukee, Minneapolis, Newark, New Orleans, New York, Philadelphia, Pittsburgh, Providence, Rochester, St. Louis, San Francisco, Seattle, Waterbury



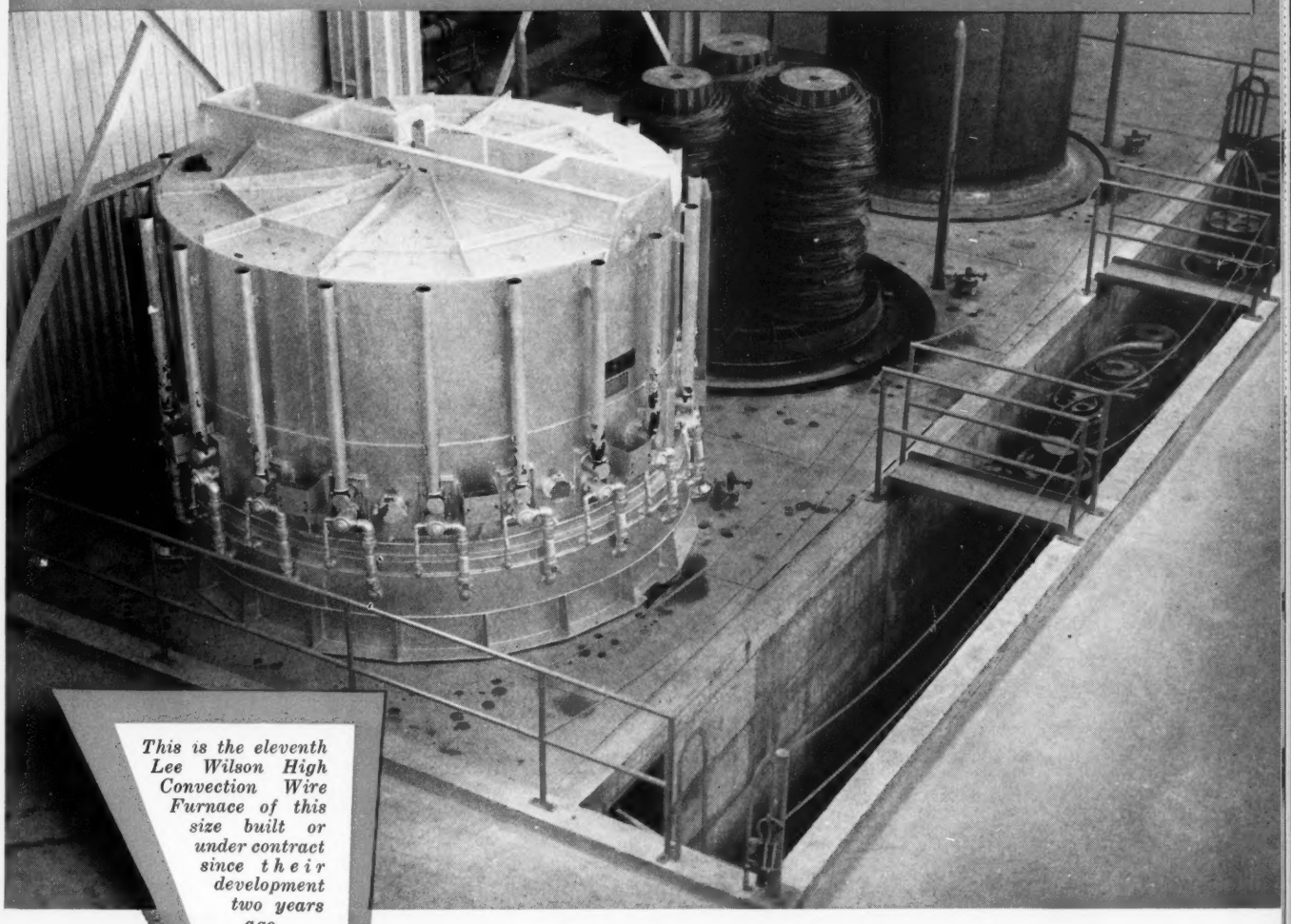
Continuous Clark Bond means **Secure** Spool Assembly

The continuous bond, illustrated above and developed by J. L. Clark, insures secure spool assemblies in a variety of sizes for insulated wire, automotive cable, radio and television wire, and wire solder. This bond between the center and the end of the spool, reinforced by nibs impressed into the cap, positively eliminates independent turning of end, cap, or center. Safety of construction, featuring a full curl at the outer edge of the end and a perfectly smooth surface at the juncture of the center and end, prevents wire from snagging or tearing. A sturdy, *locked seam* provides center rigidity . . . eliminates buckling or bending.

These outstanding J. L. Clark wire spool features are part of a fully integrated service that includes creative design, lithographic decoration, special fabrication, and packaging and shipping. Clark's staff of specially trained artists is available to work with customers in developing and designing colorful spools which enhance product salability and assure instant brand identification. Lithographic decoration combines unusual brilliance and eye appeal with complete product protection. Ask today about our complete spool service. Your inquiry will receive prompt attention from a Clark sales representative, who will gladly send samples and complete information.
J. L. Clark Manufacturing Co., Home Office and Plant, Rockford, Illinois; Liberty Division Plant and Sales, Lancaster, Pennsylvania; New York Sales Office, Chrysler Building, New York 17, New York.

J. L. CLARK
Lithographed Metal Containers

The newest thing in Wire Annealing



This is the eleventh Lee Wilson High Convection Wire Furnace of this size built or under contract since their development two years ago.

. . . The Lee Wilson High Convection Furnace!

THE Lee Wilson High Convection wire annealing equipment is offering the wire industry a new tool for better quality and higher yield at lower equipment cost per ton.

To meet the demands of ever-increasing size of production orders, the Lee Wilson 108" charge diameter furnace permits fast, uniform annealing of three stems of rods per charge — and up to 36,000-pound loads of drawn wire.

The extraordinarily high 5,000,000 Btu./hr. fuel input is put to efficient work by an exclusive circulating system that moves the gases under the inner cover at a rate of more than five times that of older style designs. The 25 HP fan drive motor moves the gases under the inner cover more than 25,000 cfm.

Lee Wilson* ENGINEERING COMPANY, INC.
20005 WEST LAKE ROAD • CLEVELAND 16, OHIO

HIGH CONVECTION ANNEALING FURNACES
MAKE THE BEST METALS BETTER

10024

*ORIGINATORS AND LEADING PRODUCERS OF HIGH CONVECTION ANNEALING FURNACES

Coming in October . . . . . the

ANNUAL CONVENTION of THE WIRE ASSOCIATION

THE TIME: October 29 through November 1, 1956

THE PLACE: William Penn Hotel, Pittsburgh, Pennsylvania

FOR THE FERROUS DIVISION • • •

Twelve papers of outstanding interest have been selected by the Program Committee for the technical sessions. On Thursday morning a plant inspection trip to Monessen to visit the Rod and Wire Mills of Pittsburgh Steel Company is scheduled.

FOR THE NON-FERROUS DIVISION • • •

A similar number of papers relating to non-ferrous bare wire and electric wire and cable manufacture will be presented at the technical sessions. A plant visit on Thursday morning to the mills of the Copperweld Steel Company has been ararnged.

SPECIAL FEATURES

ANNUAL LUNCHEON, WEDNESDAY—At this time the medal Award and Certificates of Honorable Mention will be awarded for the best papers of 1955. The 25-year Membership Certificates will also be presented. The Mordica Memorial Lecture, "Fulfillment of a Trust," will be given by Kenneth H. Davis, Pres., K. H. Davis Wire & Cable Corporation.

ANNUAL MEETING OF ASSOCIATION, WEDNESDAY AFTERNOON — All Association members should attend. It is an opportunity to vote on matters proposed by the Directors, to offer your ideas as to what you want the Association to do and to hear what is going on.

ANNUAL STAG SMOKER-DINNER, WEDNESDAY EVENING — Don't miss this traditional affair. Fine dinner, good fellowship and a first class show.

The full, detailed program next month.

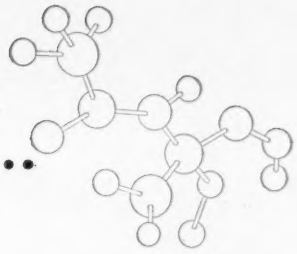
All persons active in the wire industry are cordially invited to the Convention.

THE WIRE ASSOCIATION

RICHARD E. BROWN, Executive Secretary

453 MAIN STREET • STAMFORD, CONN.

Du Pont changed some molecules . . .



to produce the higher heat resistance of ALATHON®

polyethylene resin

From the Du Pont laboratories comes "Alathon" polyethylene resin with increased heat resistance for insulation and jacketing. This extra measure of protection for copper and aluminum conductors is in addition to other important properties, such as weatherability.

Jacketing of "Alathon" has outstanding dielectric strength. This material is lightweight and pliable; users find it easy to handle. Jacketing of "Alathon" provides real economy because it lasts for years without festooning or splitting. Another advantage is its low rate of water absorption.

For more property and application data on the family of Du Pont "Alathon" polyethylene resins, clip and mail the coupon below.

There is a difference in polyethylenes - specify ALATHON®
polyethylene resin

DU PONT
REG. U.S. PAT. OFF.

BETTER THINGS FOR BETTER LIVING . . . THROUGH CHEMISTRY

E. I. du Pont de Nemours & Co. (Inc.)
Polychemicals Department
Room 707, Du Pont Building, Wilmington 98, Delaware
In Canada: Du Pont Company of Canada Limited, P. O. Box 660, Montreal, Quebec

Please send me complete information on Du Pont "Alathon" polyethylene resins. I am interested in evaluating these materials for.....

.....

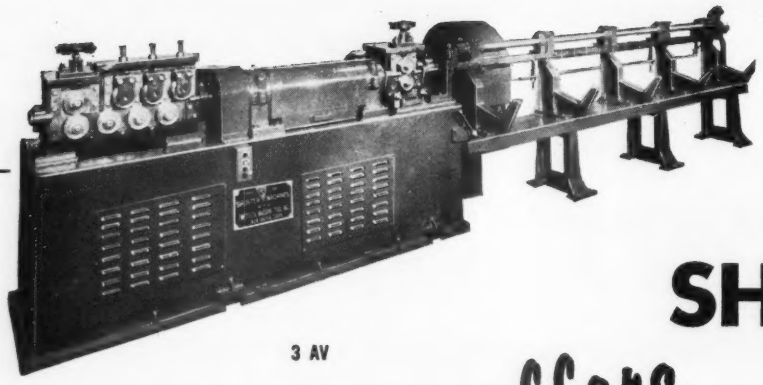
*Name*_____ *Position*_____

*Firm Name*_____

*Street Address*_____

*City*_____ *State*_____

*Type of Business*_____



3 AV

90th year

SHUSTER

offers most!!

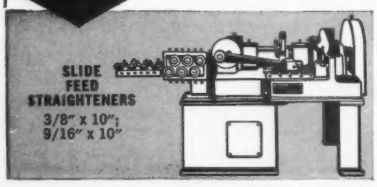
In Wire Straightening and Cutting, SHUSTER variable speed machines consistently provide the newest tested principles of operation – SHUSTER'S 90 years' know-how will cut your wire straightening and cutting costs every day!

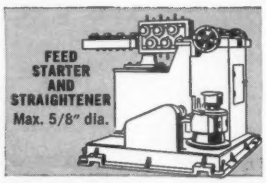
	SHUSTER	Manufacturer B	Manufacturer C	Manufacturer D
Infinite variable speed of all feed and cutoff ranges	YES	NO	NO	NO
Electrically controlled Target and Clutch	YES	Some Models	NO	NO
Power Consumption	LOW	HIGH	MEDIUM	HIGH
Complete On-The-Job Engineering service	YES	NO	NO	NO
Flat and Shape Stock Machines available	YES	YES	NO	NO

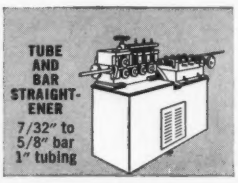
SHUSTER – the *first* name (since 1866) in Wire Straightening and Cutting, offers *more* production features, at less investment and operating cost, than have ever been available in the field!

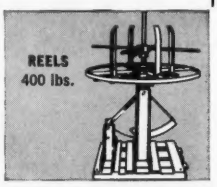
METTLER
MACHINE TOOL, INC.
155 West Adeline Street, New Haven, Conn.

This too is SHUSTER.









It's outstanding!

EVERY MANUFACTURER who tries Roebling high carbon flat spring steel discovers the same thing... that this spring steel is absolutely unexcelled for dimensional and mechanical uniformity... for speeding production and cutting down rejects.

You always *pay* for the best when you buy flat spring steel... make sure you *get* it by specifying Roebling. John A. Roebling's Sons Corporation, Trenton 2, N. J.

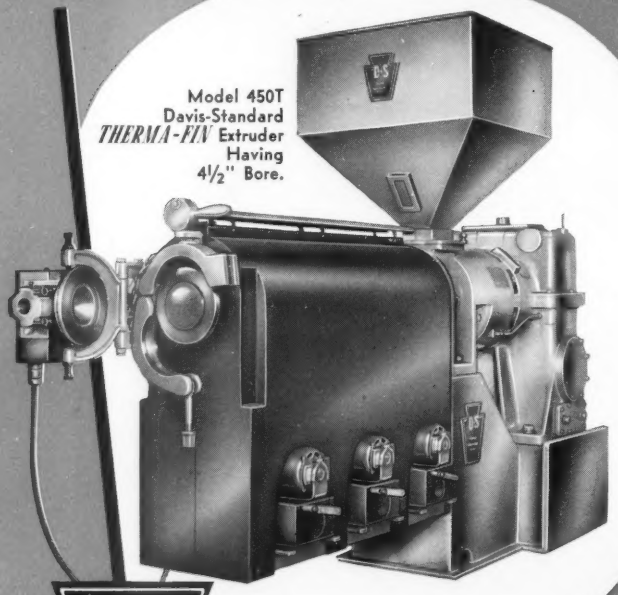
Empire State Building, world's tallest building.

ROEBLING

Subsidiary of The Colorado Fuel and Iron Corporation

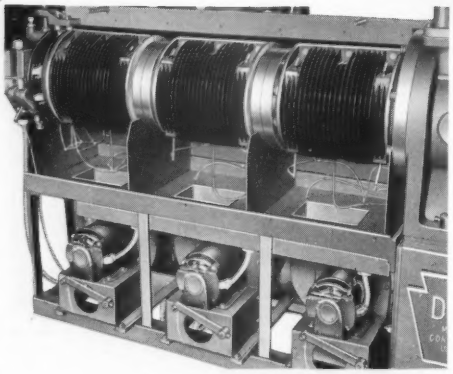
ATLANTA, 934 AVON AVE. • BOSTON, 51 SLEEPER ST. & 5 PITTSBURGH ST. • CHICAGO, 5525 W. ROOSEVELT RD. • CINCINNATI, 2340 GLENDALE-MILFORD RD., EVENDALE • CLEVELAND, 13225 LAKEWOOD HEIGHTS BLVD. • DENVER, 4801 JACKSON ST. • DETROIT, 915 FISHER BLDG. • HOUSTON, 6216 NAVIGATION BLVD. • LOS ANGELES, 5340 E. HARBOR ST. • NEW YORK, 19 RECTOR ST. • ODESSA, TEXAS, 1920 E. 2ND ST. • PHILADELPHIA, 230 VINE ST. • ROCHESTER, 1 FLINT ST. • SAN FRANCISCO, 1740 17TH ST. • SEATTLE, 900 1ST AVE. S. • ST. LOUIS, 3001 DELMAR BLVD. • TULSA, 321 N. CHEYENNE ST. • EXPORT SALES OFFICE, 19 RECTOR ST., NEW YORK

Hot Summers Present No Problems For...



Model 450T Davis-Standard *THERMA-FIN* Extruder Having 4½" Bore.

D-S
MYSTIC
CONNECTICUT
U. S. A.



View of the *THERMA-FIN* Temperature Control System on the 4½" Davis-Standard THERMA-FIN Extruder (Insulating Cover Removed).

THERMA-FIN EXTRUDERS*

. . . BECAUSE Davis-Standard's unique *THERMA-FIN* temperature control system is so effective *THERMA-FIN* Extruders produce at rated capacity, *without overheating*, even during the hot summer days. Performance reports on several *THERMA-FIN* Extruders in use during the hot, record-breaking summer of 1955 emphasized this point repeatedly.
Standard and super models are available in 1½", 2", 2½", 3¼", 4½", and 6" bore sizes. For complete information on any of the *THERMA-FIN* Extruders, write to:

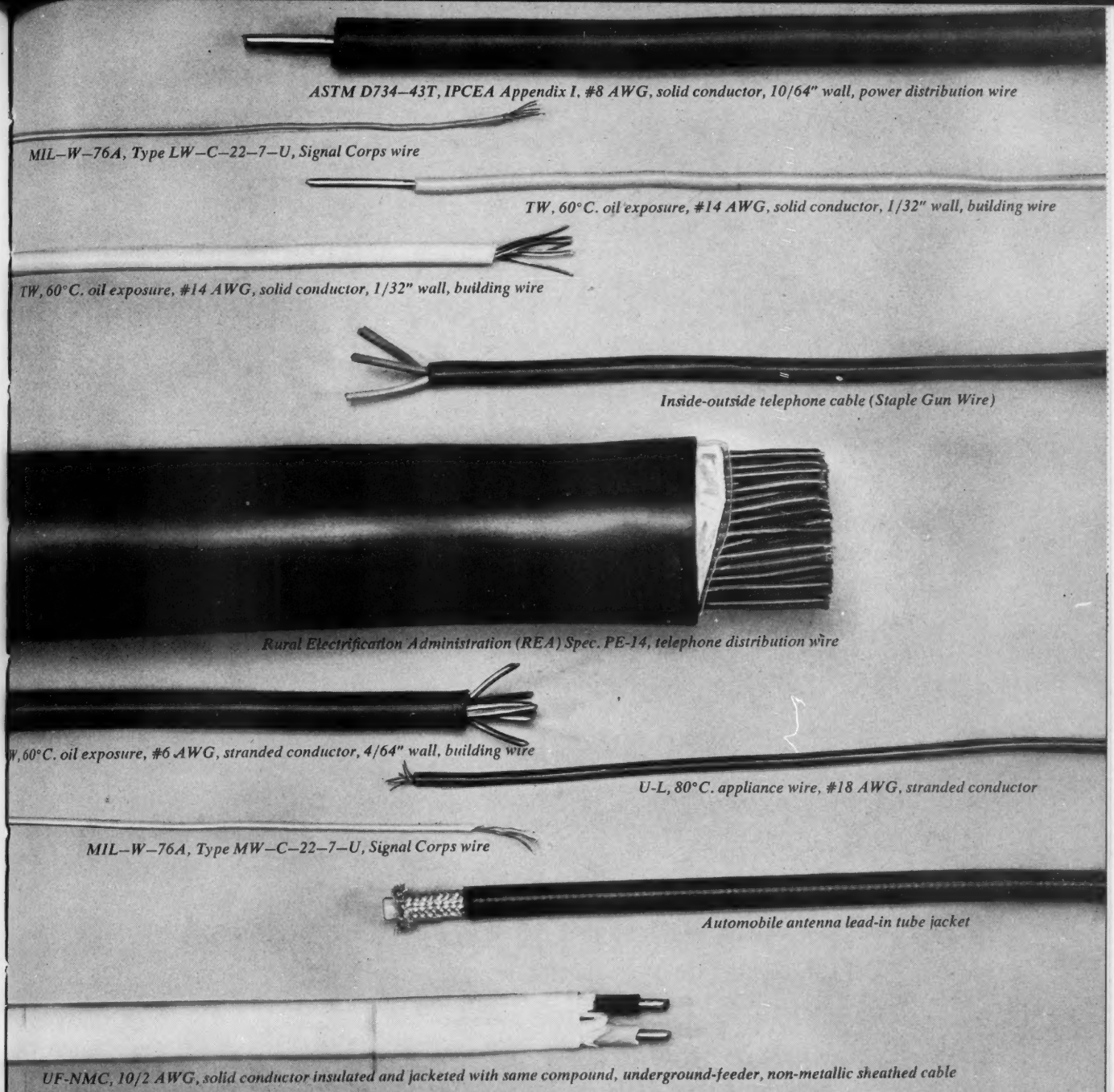
*U. S. Patents Pending

D-S
MYSTIC
CONNECTICUT
U. S. A.

DAVIS-STANDARD
SALES CORPORATION

12 WATER STREET, MYSTIC, CONNECTICUT

SOLE SELLING AGENTS FOR . . . THE STANDARD MACHINERY COMPANY, World's Largest Manufacturers of Custom-Built Extruding Machines IN EUROPE AND THE STERLING AREA. CONTACT FINNEY PRESSES LTD., BIRMINGHAM, ENGLAND


ASTM D734–43T, IPCEA Appendix I, #8 AWG, solid conductor, 10/64" wall, power distribution wire
MIL–W–76A, Type LW–C–22–7–U, Signal Corps wire
TW, 60° C. oil exposure, #14 AWG, solid conductor, 1/32" wall, building wire
TW, 60° C. oil exposure, #14 AWG, solid conductor, 1/32" wall, building wire
Inside-outside telephone cable (Staple Gun Wire)
Rural Electrification Administration (REA) Spec. PE-14, telephone distribution wire
W, 60° C. oil exposure, #6 AWG, stranded conductor, 4/64" wall, building wire
U-L, 80° C. appliance wire, #18 AWG, stranded conductor
MIL–W–76A, Type MW–C–22–7–U, Signal Corps wire
Automobile antenna lead-in tube jacket
UF-NMC, 10/2 AWG, solid conductor insulated and jacketed with same compound, underground-feeder, non-metallic sheathed cable

One vinyl compound for all–versatile OPALON* 1038

Remarkable physical and electrical properties qualify OPALON 1038 for scores of uses

A single insulating and jacketing compound now gives outstanding performance on a wider range of wire and cable applications than has ever been practical before. It is available to you *without* a premium price!

A unique combination of high insulating efficiency, excellent heat resistance and extreme toughness is responsible for the all-purpose versatility of Monsanto Opalon 1038 vinyl compound.

Opalon 1038 is widely used for U-L Type T, TW and exposure to oil at 60° C., as well as for U-L 80° C. appliance wire.

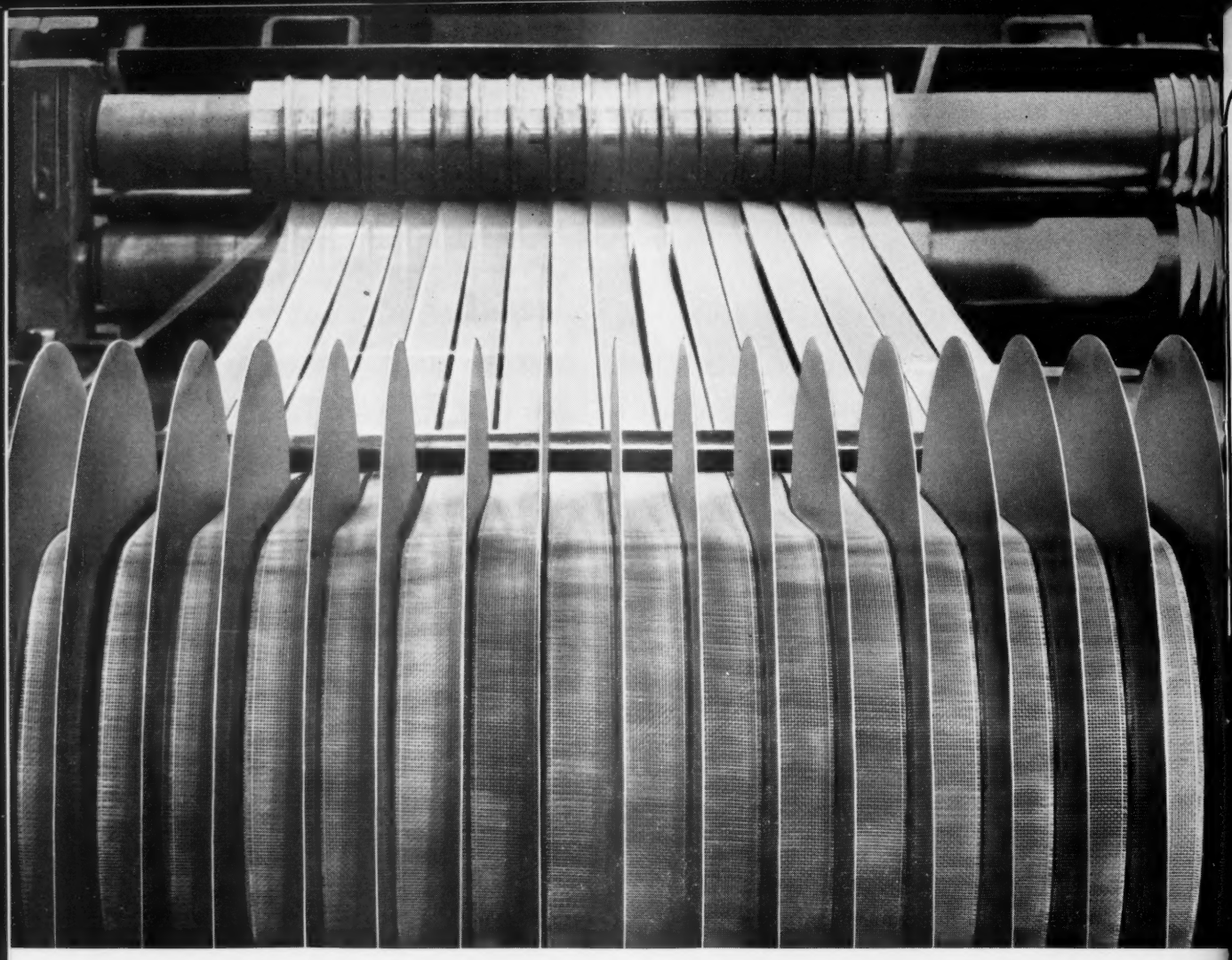
To simplify inventory and stock control, the same compound is recommended for both primary insulation and jacket in UF-NMC, underground feeder and non-metallic sheathed cable. It is especially good for machine tool wiring.

Rugged physical properties, including weather resistance and flame resistance, also qualify Opalon 1038 for insulating large-sized building wire (#6 AWG and over) and for cable jacketing.

All these applications have won appropriate recognitions from U-L, IPCEA, REA and Government agencies. For data sheets and complete information, write Monsanto Chemical Company, Plastics Division, Room 1122, Springfield 2, Mass.

MONSANTO

*OPALON: REG. U. S. PAT. OFF.



HOW WE GO TO ANY LENGTH...OR WIDTH...
to help you save money on wire cloth components!

● Wire cloth users are experiencing a couple of new reasons why it pays to do business with the Reynolds Wire Division of National-Standard.

Here's the idea. . . .

In blanking or forming wire cloth components, a roll of wire cloth 2 to 8 times normal length means 2 to 8 times as much production in a single run without a shutdown. It also means less waste and less handling!

Similarly, when cloth is pre-slit (as shown above) to exactly the width a customer really needs, this too results in less waste, faster production and reduced handling.

So these days Reynolds Wire is departing more and more from old established industry standards . . . producing wire cloth in continuous lengths up to 800 feet instead of standard 100-foot rolls . . . and furnishing pre-slit cloth as narrow as 1 inch wide and even less.

Why not talk with Reynolds about your wire cloth needs? If we can help you cut production costs you'll be ahead on *every* count...for there's no better, more uniform wire cloth than that you can get from Reynolds. Try us.

NATIONAL-STANDARD COMPANY • NILES, MICHIGAN
Tire Wire, Stainless, Fabricated Braids and Tape

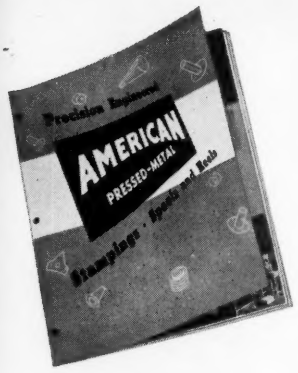
ATHENIA STEEL DIVISION • CLIFTON, N. J.
Flat, High Carbon, Cold Rolled Spring Steel

REYNOLDS WIRE DIVISION • DIXON, ILLINOIS
Industrial Wire Cloth

NS
NATIONAL-STANDARD Company
NILES, MICHIGAN

WAGNER LITHO MACHINERY • JERSEY CITY, N. J.
Special Machinery for Metal Decorating

WORCESTER WIRE WORKS DIVISION • WORCESTER, MASS.
Round and Shaped Steel Wire, Small Sizes



Send for your free copy of our latest bulletin on American Pressed-Metal Spools and Reels. It contains full details and charts on the many standard types.

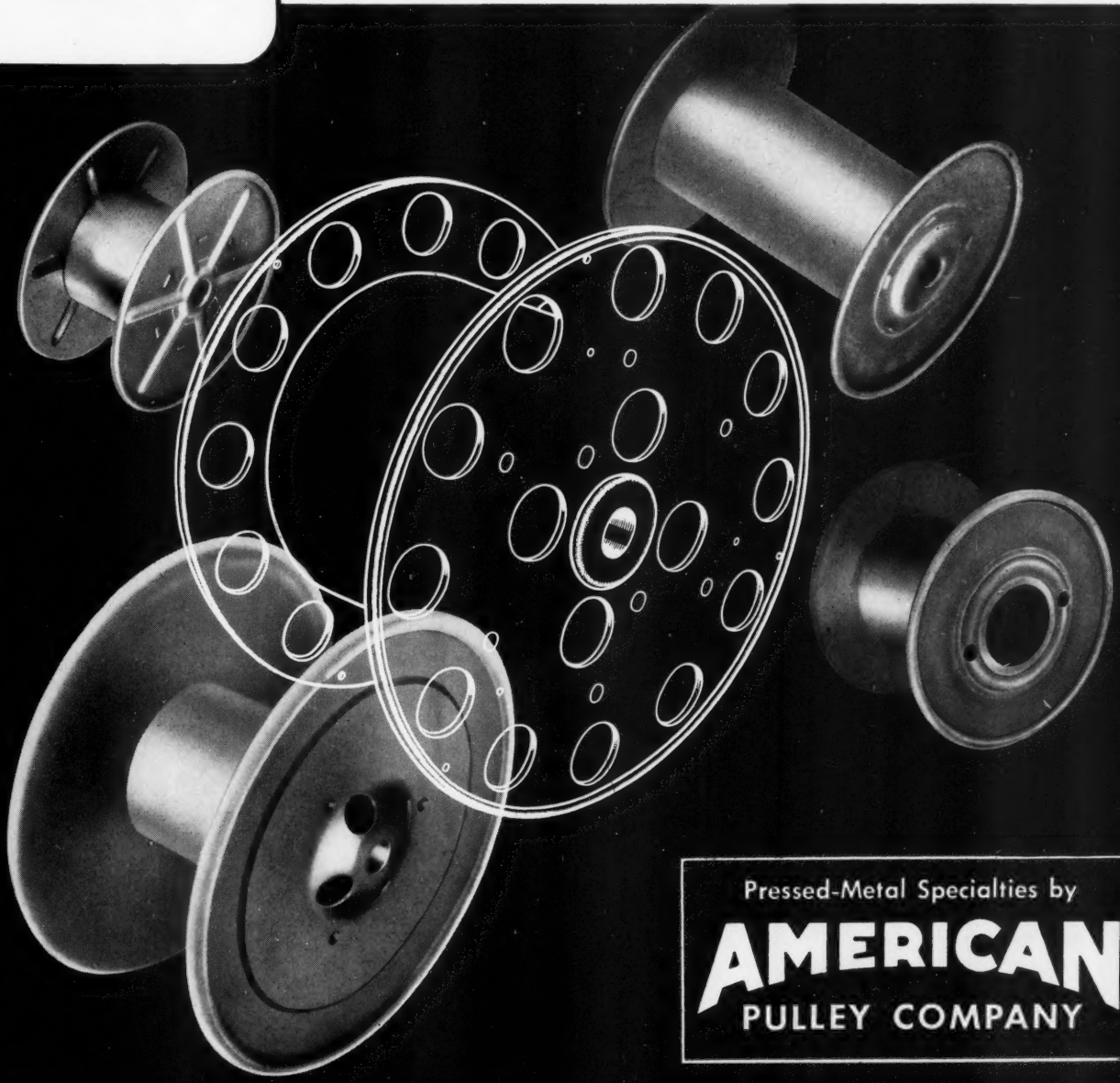
For shipping or processing spools and reels get exactly what you want from American Pulley

Name your need . . . there's an American pressed-metal reel or spool to meet it. And if our long list of standard sizes doesn't contain the model you need, we'll custom-build one to your exact requirements.

American pressed-metal spools and reels are practically indestructible—won't crack, chip or warp. They offer the added advantages of light weight, cleanliness and strength.

Almost 60 years' experience in design and manufacture—plus a vast assortment of tools, dies and other facilities for making all types of spools and reels to strict custom specifications—are at your service.

Send us your specifications, blueprints or merely tell us what you need and we'll design from scratch. You'll find our quotations fast, realistic and offering you good value for the money. The American Pulley Company, 4242 Wissahickon Ave., Philadelphia 29, Pa.



Pressed-Metal Specialties by

AMERICAN

PULLEY COMPANY

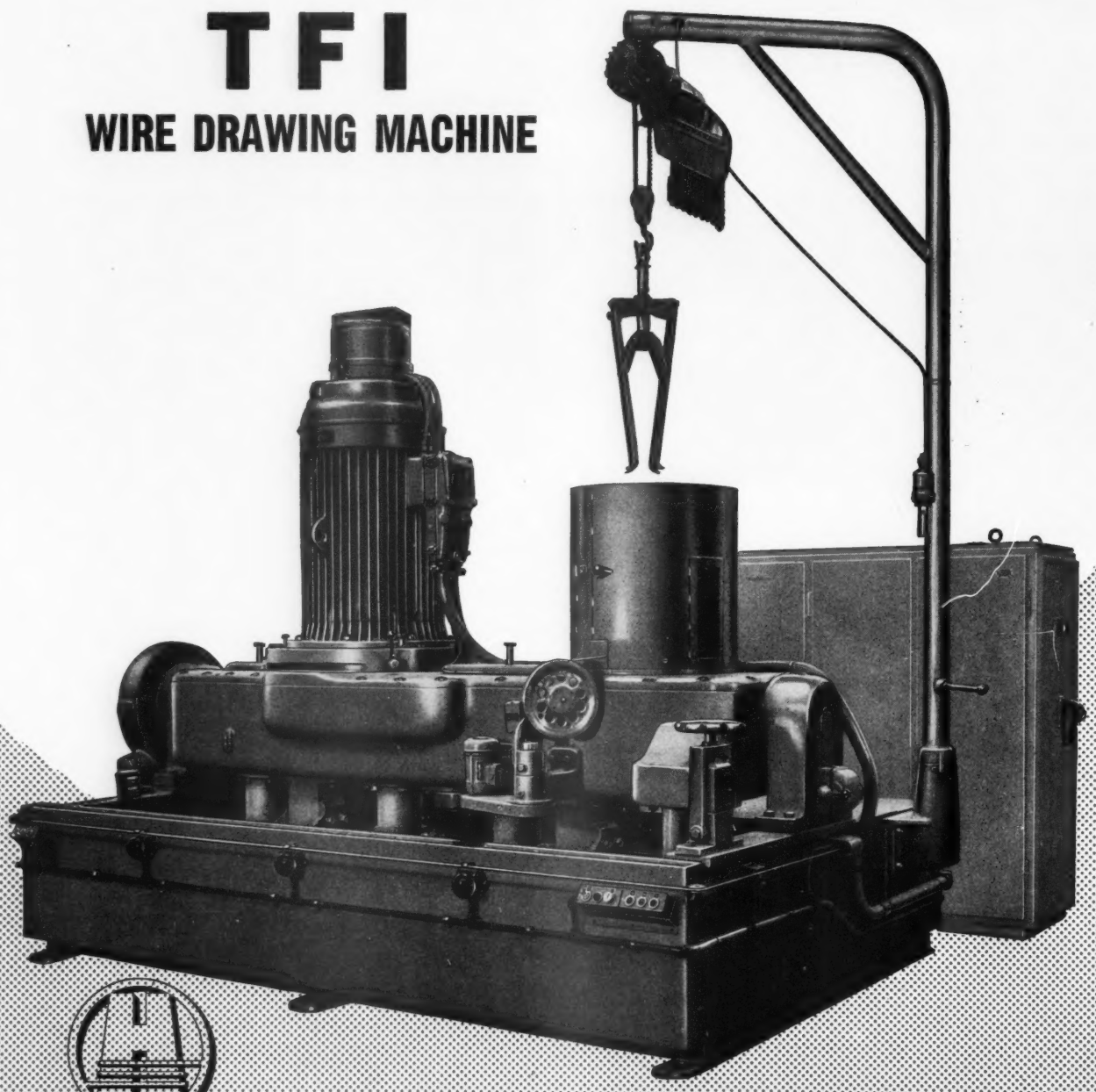
HIGH PRODUCTION

OF NON-FERROUS WIRE

is obtained with our

TFI

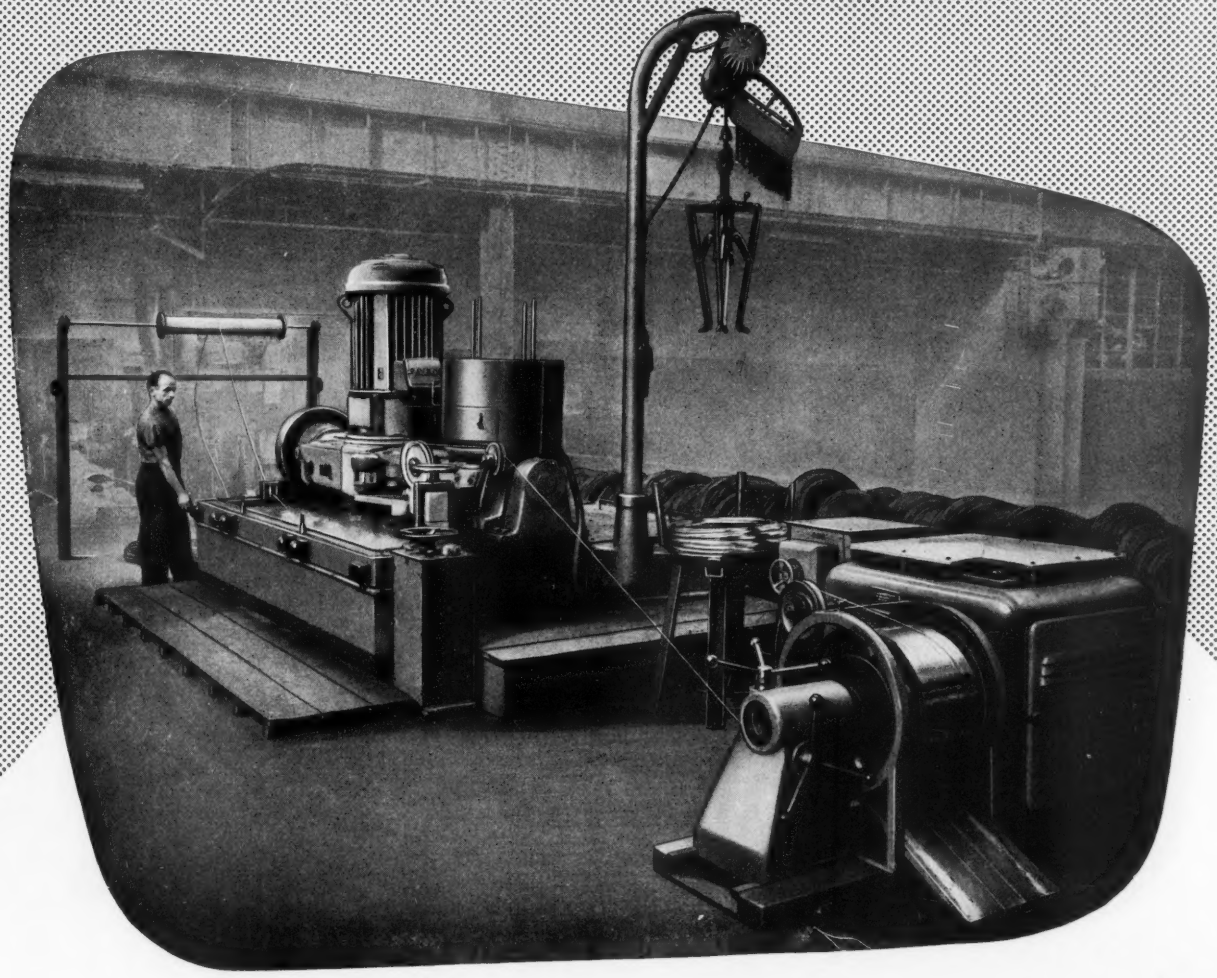
WIRE DRAWING MACHINE



MASCHINENFABRIK HERBORN BERKENHOFF & DREBES A.-G. **HERBORN/DILLKREIS** GERMANY

Sole Representative in the U. S. A.

KURT ORBAN CO., Inc., 34 Exchange Place, JERSEY CITY 2, N. J.



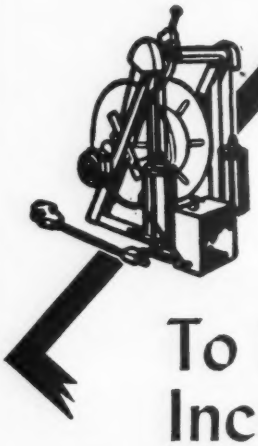
for drawing copper rod
by the "HERBORN" submerged system
from .315" to .137" – .066"
or from .255" to .118" – .055".

- ★ **3 different drawing speeds up to 3950 ft/min.**
- ★ **easy stringing of dies through automatic swivelling of the gear box.**
- ★ **high resistance to wear of drawing capstans.**
- ★ **sharply reduced space requirement.**

MASCHINENFABRIK HERBORN BERKENHOFF & DREBES A.-G. **HERBORN/DILLKREIS**
GERMANY

Sole Representative in the U. S. A.:

KURT ORBAN CO., Inc., 34 Exchange Place, JERSEY CITY 2, N. J.

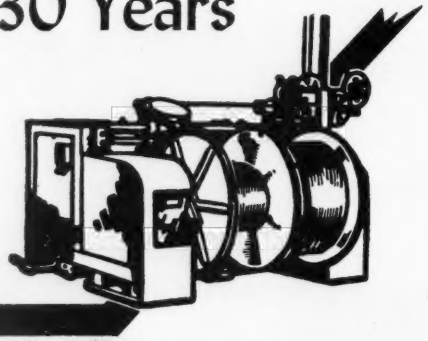


To Modernize Your Plant, Increase Efficiency And Assure Durable Dependability Look To.....

ENTWISTLE MANUFACTURING CORPORATION

FORMERLY JAMES L. ENTWISTLE CO.

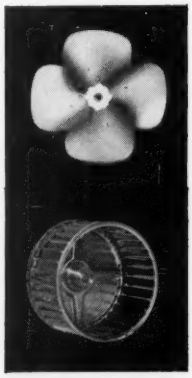
Leading Designer And Builders Of Wire Machinery For Over 30 Years



Plant and Executive Offices
1475 ELMWOOD AVE., CRANSTON (PROV. 7), RHODE ISLAND

SPRING CLINIC

Torrington leads the field in the development of the most advanced wire forming equipment available today. One of the reasons is Torrington's Wire Forming Laboratory, devoted exclusively to the professional springmaker's problems. This kind of close and constant study of our customers' needs has resulted in wire forming machinery tailored to meet the toughest requirements for versatile and economic production. If *you* have problems in coiling or costing, your inquiries will be classified CONFIDENTIAL!

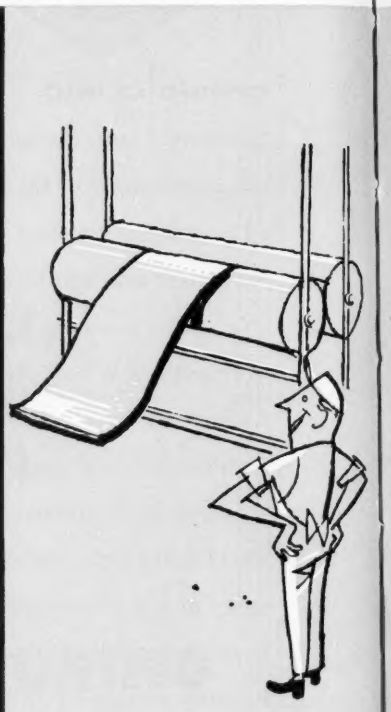


THE
TORRINGTON
MANUFACTURING COMPANY
TORRINGTON, CONNECTICUT
VAN NUYS, CALIFORNIA · OAKVILLE, ONTARIO

NAUGATUCK NAUGAPOL POLYMERS

Naugatuck uses only acid as a coagulant rather than salts which tend to remain and absorb moisture in the rubber.

While still wet, the coagulated polymer is strained to squeeze out all the acid serum.



After drying, the polymer is again strained and milled to insure cleanliness and uniformity. Milling also aids subsequent processing.

Specially Processed for Low Moisture Absorption

MADE to be *different!* That's the story of Naugatuck's premium grades of GR-S rubber known now as NAUGAPOLS*. Naugatuck's *special processing* during transformation from the liquid copolymer state produces elastomers characterized by:

- **VERY LOW MOISTURE ABSORPTION**
- **HIGH DIELECTRIC PROPERTIES**
- **EXTREME CLEANLINESS AND UNIFORMITY**
- **LOW ASH CONTENT**
- **EASE OF SUBSEQUENT PROCESSING**

As a result, NAUGAPOLS are especially suitable for use in *wire and cable insulation, pressure-sensitive adhesives, and mechanical rubber products requiring good flexibility at sub-freezing temperatures.*

A stabilizer or antioxidant is added to each NAUGAPOL prior to flocculation to protect it against oxygen deterioration and heat degradation during manufacture, storage and later processing. A crosslinking agent has also been added to NAUGAPOL 1018 to give it optimum processing properties while retaining its excellent dielectric and low moisture-absorption characteristics.

Contact your nearest Naugatuck representative for further details and current availability of these premium-grade GR-S elastomers.

*Naugatuck's trade name for its specially-processed butadiene-styrene copolymers.

CURRENT NAUGAPOL POLYMERS

Hot Types

TYPE	Bound Styrene	Mooney Viscosity	Stabilizer	End Use
NAUGAPOL 1016	23.5%	50	B-L-E (staining)	Wire and cable insulation and mechanical goods.
NAUGAPOL 1018	23.5%†	—	POLYGARD (non-staining)	Wire and cable insulation and mechanical goods. (Crosslinked processing aid).
NAUGAPOL 1019	23.5%	50	POLYGARD (non-staining)	Wire and cable insulation and mechanical goods.
NAUGAPOL 1021	46%	90	P.B.N.A. (staining)	Adhesives and sealants.
NAUGAPOL 1022	23.5%	77	POLYGARD (non-staining)	Adhesives and pressure-sensitive tape.
NAUGAPOL 1023	13%	50	B-L-E (staining)	Wire and cable insulation and mechanical goods for low-temperature service.

Cold Types

NAUGAPOL 1503	23.5%	52	POLYGARD (non-staining)	Wire and cable insulation and mechanical goods.
NAUGAPOL 1504	12%	52	POLYGARD (non-staining)	Wire and cable insulation and mechanical goods for low-temperature service.

†Including a crosslinking agent

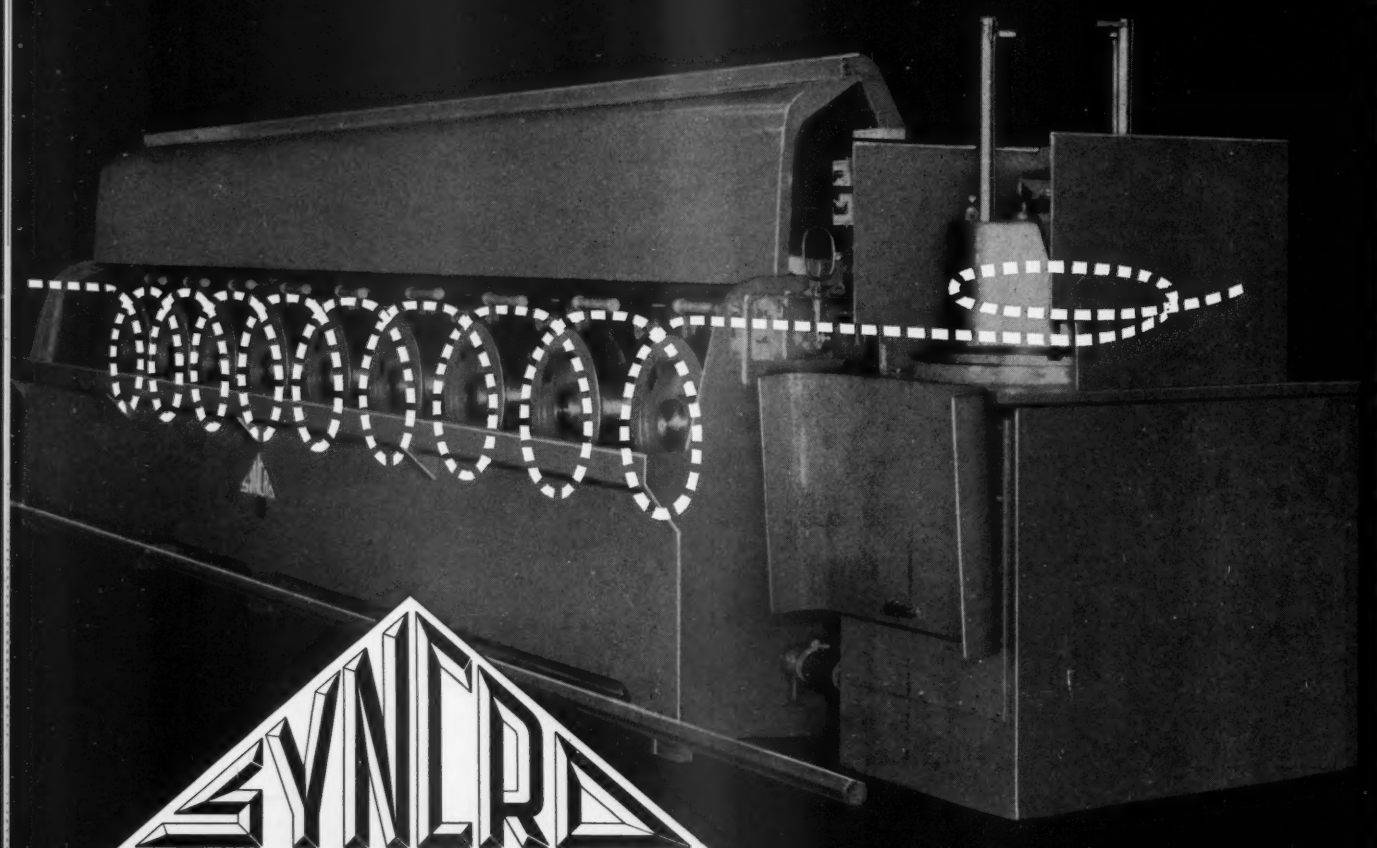
Naugatuck Chemical

Division of United States Rubber Company
Naugatuck, Connecticut

IN CANADA: NAUGATUCK CHEMICALS, Elmira, Ontario • Cable Address: Rubexport, N.Y.
Rubber Chemicals • Synthetic Rubber • Plastics • Agricultural Chemicals • Reclaimed Rubber • Latices

SUREST LINE FOR HEAVY WIRE PROFITS!

For Heavy Wire drawing in copper, aluminum and their alloys,
Syncro's complete line of tandems
permit the utmost drawing versatility at maximum speeds.
Syncro Tandems are widely used with all models of Syncro spoolers,
thus providing wire drawing and spooling at speeds up to 5000 feet per minute.
Maximum Rod entry size up to ½" diameter (soft copper).



SYNCRO

Better Machinery for the Wire Industry

SYNCRO MACHINE COMPANY

PERTH AMBOY • NEW JERSEY

Affiliated Company • WINGET-SYNCRO Ltd., Rochester, Kent, England

Manufacturers of: Wire Drawing Machines • Stranders • Continuous Electric Annealers • Heavy Duty Take-ups • Special Machinery

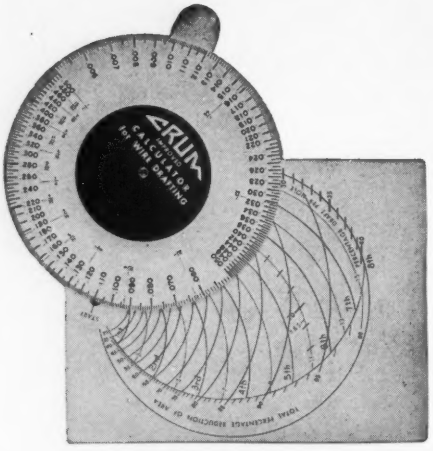
FORMVAR . . .
the industry standard
Formvar phenolic enamelled wire is wire with a balance of properties. It passes all ASTM tests.
Formvar phenolic passes tests of enamellers who demand a smooth coating that is easy to apply. It passes the tests of motor manufacturers and users who demand an enamel that stands up under automatic winding and under severe operating conditions.
Formvar is the registered trade name for polyvinyl formal produced and sold only by Shawinigan Resins Corporation. When combined with an alkyl phenolic resin it becomes that tough, heat resistant wire enamel popularly known as "Formvar enamel." 75% of all magnet wire used today is enamelled with Formvar phenolic.
Exercise of exacting production controls and active research into variations of the basic formulae keep Formvar a uniform and dependable ingredient in proved wire enamels. Look to Shawinigan and Formvar for continued progress. Shawinigan Resins Corporation, Department 5307, Springfield 1, Mass.
FORMVAR® for wire enamels by
SHAWINIGAN
RESINS

SAVE SET-UP TIME WITH THE . . .

CRUM CALCULATOR

FOR WIRE DRAFTING

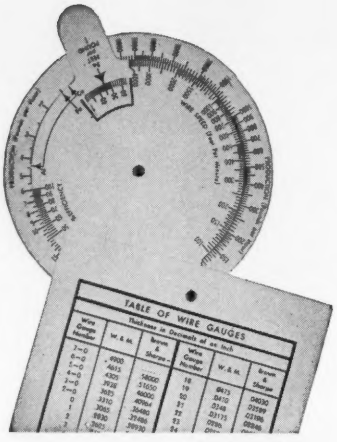
Useful and Accurate!



Front view of Crum Calculator.

THIS NEW DOUBLE-PURPOSE CALCULATOR WILL:

1. Provide quicker and more accurate information on die sizes and reduction areas;
2. Calculate wire production rates for various speeds and efficiencies.



Reverse view of Crum Calculator.

SOME OTHER FEATURES OF THE CALCULATOR

- Has new scale for more accurate determination of small percentages.
- Gives readings in B & S gauges.
- Intermediate lines provide reductions for 16 holes in one setting.
- New rectangular shaped back for better protection of calculator.
- More legible % draft-per-hole scale.
- Vinyl plastic construction, resistant to wear, warping, dirt, perspiration, wire drawing soaps—can be cleaned.
- Still fits your vest pocket.
- Handy tables of W & M and B & S gauges.
- Feet per pound calculating scale for steel, copper and aluminum wires.
- Durable, accurate, easy to use.

The improved Crum Calculator is worth its weight in gold in time saving —no laborious mathematical calculations necessary when you use it. Instruction sheet with examples accompany each Calculator. You should have one or more in your wire drawing department.

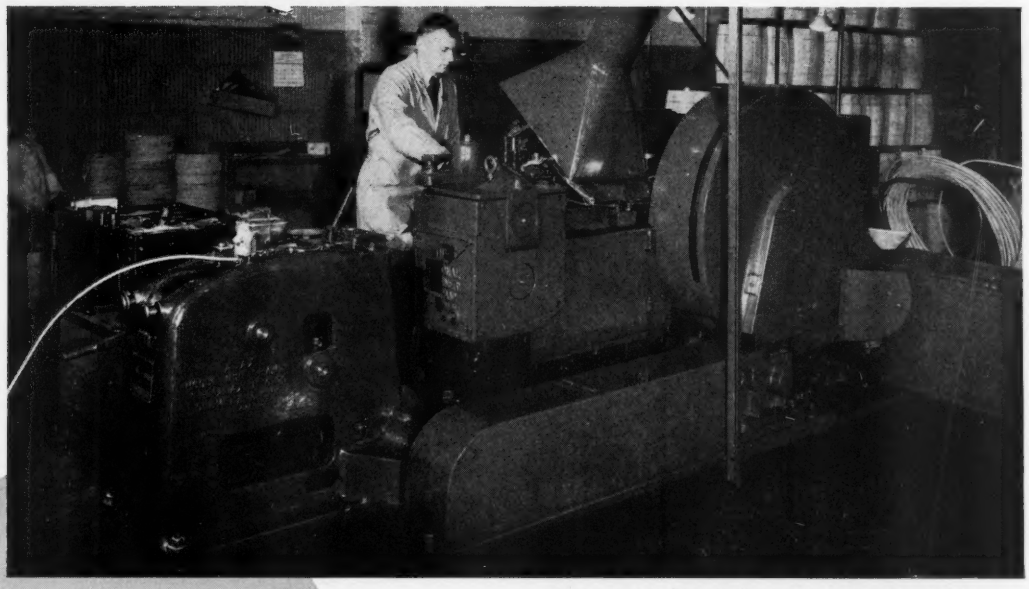
THE PRICE: $5.00 EACH

Send your orders to:

WIRE AND WIRE PRODUCTS

453 MAIN STREET **STAMFORD, CONN.**

(Exclusive distributors)



Courtesy of Lake Erie Screw Corp., Cleveland, Ohio

If you have
COLD HEADERS
you need

Ajax-Hogue Wire Drawers

Here are the Advantages of Drawing Wire at your Headers

REDUCES COST OF MATERIAL Highest quality cold headed products from hot rolled stock instead of mill drawn wire.

HEADS EASIER Less tendency for split or cracked heads. Hogue-Drawn wire has a lower yield point.

WIRE ENTERS HEADER STRAIGHT and is not coiled after drawing.

UNIFORMLY ACCURATE SIZE on successive coils.

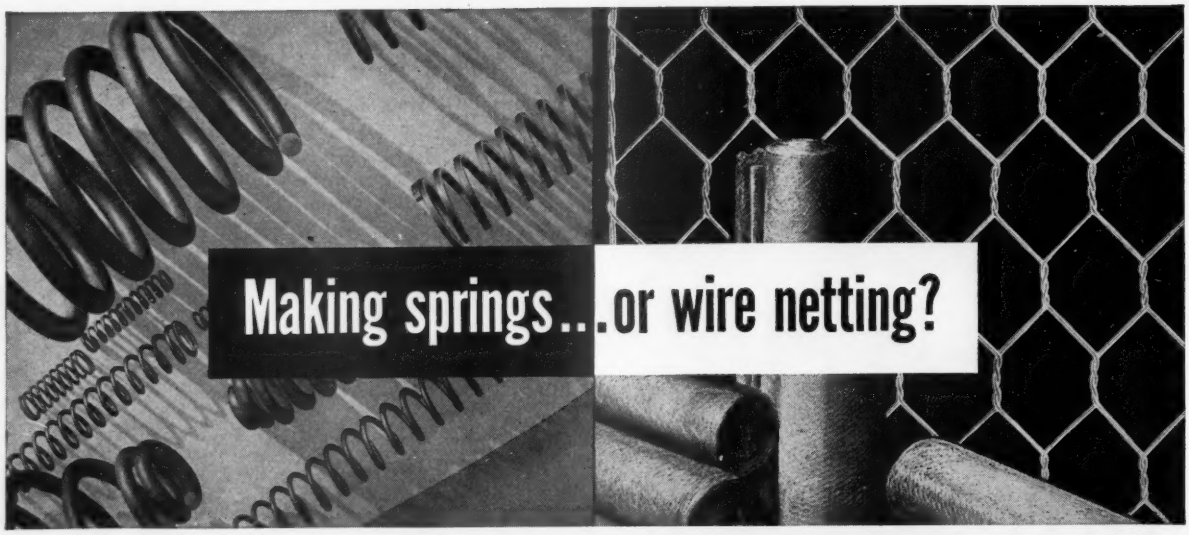
INCREASES DIE LIFE of heading dies.

CLEAN AND PERFECT COATING - no scratches or scuff.

CONTINUOUS DRAWING Rod ends may be welded together.

• *Write for Bulletin No. 111-A* •

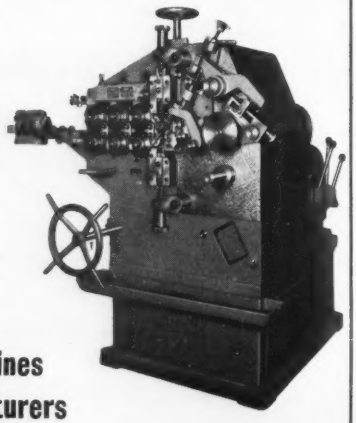
THE AJAX MANUFACTURING COMPANY
EUCLID BRANCH P. O. CLEVELAND 17, OHIO
110 S. DEARBORN ST. CHICAGO 3, ILLINOIS
DEWART BUILDING NEW LONDON, CONN.
W. P. WOOLDRIDGE CO., • BURLINGAME, CAL. • LOS ANGELES 22, CAL.



Use the 60 years' experience built into WAFIOS automatic machines

You can produce right and left-hand springs in cylindrical, single and double-cone shapes, both open and close-wound with WAFIOS UNIVERSAL AUTOMATIC SPRING COILING MACHINES. Specially shaped springs, springs with closed ends and torsion springs with shanks can also be manufactured on these machines.

They're compact, accurate, simple and economical machines to operate and easily adjusted; have 2-3 wire feed speeds; 18 to 30 steps for wire length adjustment. Automatic stopping of feed rollers during cutting off. Coiling dies, pitch tool and cutter mandrel can be adjusted during operation.



Type UFM50R handles wire sizes from #19 to #6 AS&WG—produces springs up to 3" outside diameter at rates of about 48, 68 and 88 per minute. Other UFM types for wire sizes from #40 AS&WG to 5/8".

Other Wafios Machines for spring manufacturers

Spring end grinders; simple spring coilers; machines for special tension springs; winders for cylindrical tension and compression springs, bowdencoils, spirals for electrical appliances, baby carriage springs, spirals for spring roller bearings, special section spirals, springs for clothes pegs; looping machines; lock washer machines; torsion spring winders.

Write for Catalog No. 201

WAFIOS
MASCHINENFABRIK
Wagner, Ficker & Schmid • Reutlingen 3, Wuerttemberg, Germany

All types of square mesh netting with both edges knuckled or with ends spiral twisted are made on this WAFIOS AUTOMATIC DOUBLE SPIRAL CHAIN LINK FENCING MACHINE. Width of mesh from 3/8" to 2". For wire sizes from 16½ to 9½ AS&WG.

Other sizes and types for automatic and semi-automatic manufacture of chain link fencing in a wide range of mesh widths and wire sizes.

WAFIOS MACHINES for Wire Netting and Wire Mesh Fabrics . . .

Complete equipment for the manufacture of hexagonal, straight line and triangular mesh wire netting.

Automatic machinery for the manufacture of barbed wire and staples.

Round mesh weaving machines for the manufacture of 1-, 2- and 3-ply round mesh weaving for mattresses and other applications. Manual, semi-automatic and automatic types. Also used for crossed and interwoven mesh for many other applications.

Wire crimping machines in manual and automatic types.

Assembling looms for the manufacture of crimped mesh from crimped wire.

Write for Catalog No. S-100

Sole distributor for U.S.A.:

KURT ORBAN COMPANY, INC.
34 Exchange Place, Jersey City, N. J.

Sole agents for Australia and New Zealand:
Bliss & Reels Co. Pty. Ltd., 64-66 Little Bourke St., Melbourne C. 1, Australia

A Boon To Wire Manufacturers

the

New—Non-Returnable Magnet Wire-Shipping Reel

● ANOTHER NEW DEVELOPMENT
by HUBBARD

DESIGNED FOR—

(1) High-Speed Wire Take-Off

(2) Requires No Accessories nor Change in Present Wire Manufacturing Equipment

(3) Light-Weight—Lower Freight Costs

(4) Lower Initial Cost of Reel

(5) High Tensile and Impact Strength

(6) Ideal for Palletized Shipments

DIRECT YOUR INQUIRIES TO –

Hubbard Spool Co.

GARRETT, INDIANA

Telephone Garrett 840

For the FINEST Dies...

Specify

There Are Many Reasons Why V-R Leads The Field!

V-R NEW Cylindrical nib and improved method of assembly insure high degree of concentricity.

V-R . . . First in producing the only Tantalum-Tungsten carbide developed specifically for Drawing Dies.

V-R . . . First to manufacture Carbide Dies with preformed rough cored back relief.

V-R . . . First to furnish Carbide Dies rough cored to finish at hole sizes below .010".

WRITE TODAY for NEW Vascoloy-Ramet Die Catalog VR-461.

The New V-R Die Catalog gives complete ordering information on all V-R Dies for drawing wire, rod, bar and tube.

Vascoloy-Ramet CORPORATION

800 MARKET STREET

WAUKEGAN, ILLINOIS

The Wire Outlook

In spite of the fact that auto production has dipped to a point lower than expected because of a disappointing demand for the 1956 models, the economy as a whole is still moving in high gear. The demand for steel through the second quarter has been so great that some observers believe that a slowdown in business through the summer months would allow the steel suppliers to get their delivery position on a better basis.

The question that is giving Washington most concern at the moment is that of the steel wage negotiations. The outcome can have political as well as inflationary implications. The union demands this year are greater than previously and have less justification than ever. It boils down to the fact that costs to steel mills for modernization and expansion are so great today, having increased some 600% in the last 25 years, that without substantial price increases, it becomes more and more difficult to finance the work on the dwindling profit margins. The new wage and benefit demands, if granted, will just start another senseless rat race of spiraling prices.

It is now felt that a dip in the third quarter will not be general. It will, of course, be hard on some industries, but will be felt lightly or not at all by most, and is not likely to be of such severity that it will lower the high levels of activity. A third quarter decline in business is a normal economic phenomenon.

While the number of housing starts is smaller, the units being built are larger than before and the dollar volume of building is accordingly holding up well. As a spur to building, easier credit is believed to be on the way. In fact, easier credit will push up sales in many lines because so many items are bought on time. Industry, too, is expected to tap the investment market for practically as much money this year as last.

True it is that people are becoming more price conscious. Part of the new car trouble is resistance to high prices. New high-priced houses are harder to sell. Appliances, TVs and many other lines are quite generally sold at discounts, so much so that list prices now have little meaning. The public wants values within the limits of its pocketbook.

Rising taxes keep eating into family incomes and Federal tax reductions seem further off than ever, with local and state taxes constantly on the rise. For new schools and roads, money has to be found and the tax-squeeze is hitting practically everyone.

A seasonal improvement in merchant wire products has been noted, even though it is not spectacular. The nail business is good. Manufacturers' wire in all grades is moving well. The demand for prestressed concrete wire for bridges, for highway reinforcing fabric, for concrete pipe reinforcement and for strand for highway guard rails is at an all-time high. Cold heading wire sales are holding their own. While automotive wire sales are off, textile equipment builders, who use important quantities of wire, are placing large orders. In general, low carbon grades of wire are moving best.

The industrial furnace manufacturing industry, which did a peace-time record business last year, is reported to be 50% ahead of 1955 for the first four months.

What we are finding is that the economy is no longer dependent upon one industry, even though a major one. Times will stay good, in spite of the fact that some sectors of business may sag.

President Eisenhower, barring unforeseen developments, will be re-elected. If he is, confidence will remain high among businessmen—with all its connotations as to the future state of the nation.

—from the Editor's Desk

Steelskin

Manufacturers of

POWDERS, COMPOUNDS GREASES & COATINGS

for

WET & DRY DRAWING

of

WIRE, TUBING BARS & SHEETS

NON-FERROUS FERROUS

STEELSKIN CXH
Wire-Drawing Powder

More wire is drawn through **STEELSKIN CXH** than any other lubricant.

STEELSKIN CXH is a compounded metallic-stearate-type soap powder used for drawing both high and low-carbon steel wire, as well as many non-ferrous metals. It is being used successfully with all types of coating.

Wire for springs, rope, nails, tire bead, screen cloth, poultry netting, galvanizing and many other applications is drawn through **STEELSKIN CXH.**

And REMEMBER . . . as a STEELSKIN customer, you are entitled to STEELSKIN "on-the-job" service. This service is backed by over 40 years' experience in the field of wire-drawing lubrication.

R. H. MILLER

Company, Inc., Homer 1, N. Y.

STEELSKIN

First in

LUBRICATION!

First in

SERVICE!

Since 1909

FILL IN COUPON AND MAIL TODAY!

Please send more information on

STEELSKIN PRODUCTS

We draw: ☐ Steel ☐ Dry ☐ Sizes .....
☐ Copper ☐ Wet .....
☐ Other — Specify .....

Please have representative call.

Name ..... Title.....

Company .....

Address .....

WIRE AND WIRE PRODUCTS

A monthly publication devoted to the production of Wire, Rod and Strip.
DRAWING — ROLLING — EXTRUDING — FORMING — FABRICATING

Vol. 31 July, 1956 No. 7

Six Advantages of Wire in Product Design

by T. W. Whipple
Vice President in Charge of Sales
E. H. Titchener & Company
Binghamton, New York

Easily formed, lightweight, strong and durable, wire is an ideal material for product design. Offering unique economies in tooling, material, and production costs, welded wire assemblies are replacing other metal forms—castings, forgings, sheet and strip metals—in a rapidly increasing application range. And new platings and finishes are adding to the design potential of wire products.

Lower costs, reduced weight, noise reduction, better availability, inexpensive tooling, and enhanced appearance—these are among the major advantages of wire as a design material.

★ ★ ★

Multiple welding operations permit high volume production of welded wire assemblies and reduce unit production costs. Electric resistance spot-welding, requiring no solder or flux, offers a variety of assembly methods — crosswire welding, T-welding, butt welding, projection welding, and line welding. A primary advantage of welded wire units versus castings of sheet steel is their "skeletonizing" adaptability: they retain the basic design required, while eliminating the excess material not actually utilized by the product.

★ ★ ★

This "skeletonizing" is graphically illustrated in Figures 1 and 2. The essentials of form in both door anchor and motor mount are preserved; but the door anchor weighs only one-seventh, and the motor mount one-fourth, as much as the sheet steel types they replaced.

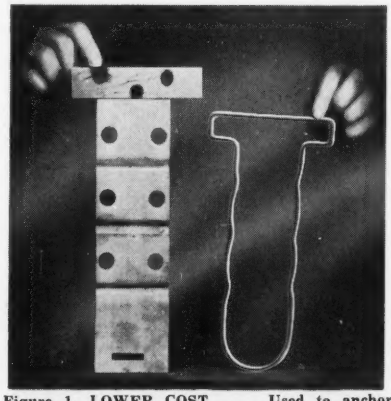


Figure 1. LOWER COST . . . Used to anchor metal door frames to masonry construction, the original corrugated strip steel anchor, left, was replaced by stronger, lighter Titchener redesign, right. Formed from a single butt-welded length of wire, new anchor cut unit cost's 70%. Natural resiliency of wire absorbs shock impact more readily than sheet steel. * * * * *

Weight reduction, besides cutting material costs, reduces operator fatigue on the assembly line, facilitates installation of wire component assemblies and decreases shipping expense.

Particularly important in the rapidly expanding field of home heating, ventilating, and air conditioning units is the ability of welded wire motor mounts to reduce motor noise. Compared with solid castings and sheet steel (see Figures 2 and 3), the resilient wire design dissipates motor vibrations more efficiently by channeling them throughout a longer, circuitous, dampening route. Also — in home unit heaters, for example—the skeletonized construction of the combination wire guard and mount reduces fan blade air turbulence to a minimum.

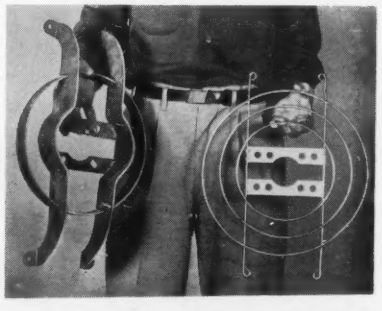


Figure 2. REDUCED WEIGHT . . . Original motor mount at left, made of ⅛-inch thick cold rolled steel, weighed 6½ pounds. Titchener suggested wire redesign at right, which meets all performance specifications of the old style at less cost. Result: new mount weighs only 1½ pounds. * * * * * * * *

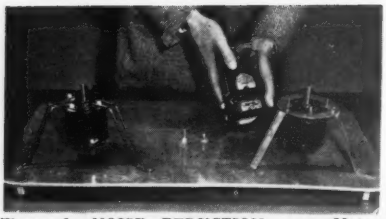


Figure 3. NOISE REDUCTION . . . Motors, tested on sound panel, confirm noise reduction potential of welded wire motor mounts. Used in hassock floor fans, wire mount, left, replaced strip steel construction, right, and permitted greatly improved decible ratings. * * *

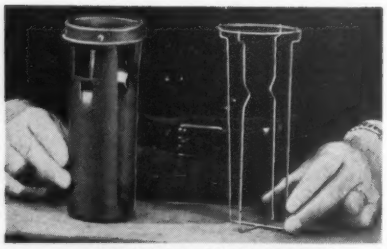


Figure 4. IMPROVED AVAILABILITY . . . Dependable supply of wire, even in times of other material shortages, was major factor in design change from sheet copper to stainless steel wire construction for acid bottle holder used in fire extinguisher. Welded wire assembly saves critical material and reduces costs. Former holder, right, consisted of solid copper stamping riveted to a copper ring. * * * * *

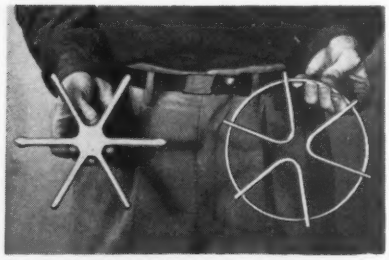


Figure 5. INEXPENSIVE TOOLING . . . Tool cost for cast iron burner grates, left, was quoted at $3,000. Titchener designed stronger, lighter grate, right, with tooling cost of $300. Saving on first order of 25,000, including 5c reduction in unit cost, was $4,015. * * * * *

As indicated in Figures 1 through 5, a certain weight of coiled wire will yield more product units than a comparable amount of other base material such as cast iron, sheet and tubular steel. But equally important in many instances is the greater availability of wire, even in times of critical material shortages. This factor insures a dependable supply of finished wire products, and at the same time permits tighter control of raw material inventory.

★ ★ ★

Availability of wire prompted redesign of acid bottle holder, Figure 4. Another similar example is the development of a time card rack constructed of wire. This is one pound lighter than the sheet steel type, and there are no supply fluctuations as with other materials. Furthermore, the new wire rack is cleaner and more easily painted, provides greater rust- and corrosion-resistance, and is less vulnerable to damage.

★ ★ ★

Welded wire assemblies normally require less tooling expenditure than their counterparts in other materials. Design symmetry of wire components permits multiple or repetitive operations suited to high volume production.

★ ★ ★

Locating features—such as U-bends and parallel wires which coincide with bolt patterns—can be incorporated into the initial design without the necessity of special operations. Wire rings or spiral forms used in one assembly often correspond dimensionally to the design requirements of other products. Frequently, production tools can be constructed so that a single set will produce several sizes of the same item.

★ ★ ★

Wire products owe much of their design appeal to the wide variety of platings and finishes which can be applied to bright basic steel wire. In our lustre-zinc process, for example, maximum brilliance is achieved by the use of a special chromate dip. Chromates give a high, polished luster to the zinc, and also improve corrosion resistance by sealing the zinc pores. The chromate film is preserved by a final coat of moisture-resistant baked lacquer.

★ ★ ★

High surface brilliance can also be obtained with nickel, copper, and brass platings, without the buffing required in plating castings or forgings. Two recent developments have further increased the decorative potential of wire products: a dull black oxidized zinc finish, with a protective coating of clear lacquer to improve durability and a rubberlike plastisol coating, available in a variety of colors and securely bonded to the wire by a dip and bake process.

★ ★ ★

But perhaps the basic explanation of how wire design enhances product appearance lies in the "geometrics" of wire construction. Each of the many geometrical patterns to which wire readily lends itself imparts a modern, functional appearance to the product. In the furniture field, wire-backed chairs have proven highly popular; and the increasing use of ornamental wire grilles and wire legs for television sets is also indicative of this design trend.

Figure 6. ENHANCED APPEARANCE . . . An example of wire's growing contribution to furniture design, the black wire legs of this folding table give it a modern wrought iron appearance. Fracture-resistant wire 3/8" in diameter, combines structural strength with lightweight construction and current style appeal. In addition, the new design was less expensive than wooden legs formerly used. * * * * * * *

Case histories, such as those here illustrated, not only point up these advantages, but are a basic research tool for furthering redesign projects in new and different wire applications.

★ ★ ★

Properly classified, the data accumulated from each product history forms an aggregate "pool" of design and manufacturing information, which can be effectively utilized in further development of wire products.

★ ★ ★

Thus, the experience recorded, say, in determining the wire configurations most conducive to noise reduction in a motor mount application, is readily available to the engineer developing a wire pinsetting cup which will minimize bowling alley noise. Similarly, the grid pattern of a redesigned heater guard can be studied for tooling

(*Please turn to page* 810)

AS&W Places New Rod Mill in Operation At Its Cuyahoga Works

What is said to be the last word in speed and automaticity in continuous, multiple strand rod mills, is described in this article. The new Morgan mill has an annual capacity 25 percent greater than the two old mills it replaces.

Engineering imagination and skill have been teamed to give **American Steel & Wire Division** the most advanced rod mill ever conceived and constructed in the steel industry.

★ ★ ★

At the Cuyahoga Works of this U. S. Steel unit, crews started "shaking-down" the world's fastest rod rolling machinery in May. Four lines of rods are produced simultaneously at more than mile-a-minute speeds.

★ ★ ★

Before the year is out, this mill will reach its annual capacity rate of production of 450,000 tons. Known as No. 1 Rod Mill, it will eventually replace the yearly 360,000 ton output of No. 2 and 4 Rod Mills placed in operation there in 1916.

★ ★ ★

The new facility includes the combination rod mill, billet storage area and rod storage area. Through the incorporation of the latest electronic controls, the mill's production will provide the highest quality product for rod and wire customers throughout the Great Lakes area.

Designing and erection of the mill was under the supervision of **Floyd A. Garman,** chief engineer, American Steel & Wire with **Morgan Construction Company,** and others acting as sub-contractors for their part of the work. All buildings, crane runways and miscellaneous steel was fabricated and constructed by the American Bridge Division.

★ ★ ★

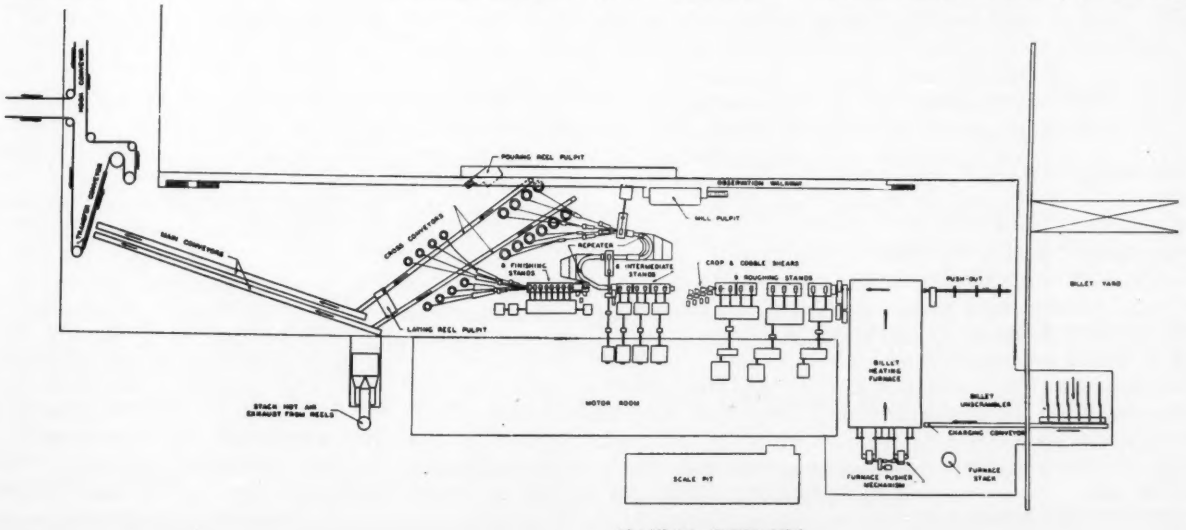
The mill consists of 25 roll stands and is capable of rolling all sizes of rods from a minimum of commercial No. 5 gauge (.218″) up to 1-1/2″ in diameter. All of the smaller sizes up through 9/16″ diameter are rolled four strand; while sizes over that figure are run either double or single strand up through the maximum of 1-1/2″.

★ ★ ★

All sizes of rod are rolled from a standard size 3-1/4″ x 3-1/4″ x 34 foot steel billet weighing 1200 pounds. The billets as received by rail are stored in outside billet storage racks serviced by overhead traveling cranes. These cranes unload incoming billets, stock them in proper racks according to analysis and as needed remove them from the racks and place them on a mechanical "billet unscrambler." This device automatically unpiles batches of billets and positions them in a single layer ready for delivery to the heating furnace run-in table.

★ ★ ★

The billet heating furnace is capable of heating 100 tons of billets per hour. The furnace is of two zone construction with a hearth area 38 feet wide and 70 feet long and has side charge and discharge openings. The furnace hearth is a combination of water cooled and refractory skids. The fuel used can be natural gas, coke oven gas or fuel oil as desired, and the furnace is complete with refractory recuperator which provides 700 degree preheated air. The brick lined steel stack carrying the furnace's products of combustion is nearly seven feet in diameter and 150 feet high.



NO. 1 ROD MILL CUYAHOGA WORKS

Compiete control of temperature, fuel air ratio and furnace pressure is available to handle this first step in rod rolling. The billets are charged four at one time from the furnace run-in table. There are approximately 256 billets in the furnace being heated at any one time. Time-wise, a single billet remains in the furnace for about one and a half hours in order to bring its temperature to a suitable rolling point from its original cold state.

★ ★ ★

After reaching a temperature of approximately 2150 degrees Fahrenheit, the billets are discharged one at a time from the furnace by means of a push out unit. This consists of a pair of electrically driven pinch rollers which propel a push out bar which in turn contacts the end of the billets and shoves it from the furnace into the first stand of the mill. As the billet leaves the furnace, a pair of motor driven pinch rollers aid in feeding the billet into the mill.

★ ★ ★

Since four billets are rolled simultaneously it is necessary for the operator at the entry end of the mill to direct the billet being pushed out of the furnace into the pass which is empty. This is done by a four line billet switch that is capable of keeping all of the active pass lines continuously supplied with hot steel without any intervals of inactivity. The entire mechanism is operated hydraulically and controlled by an operator at a nearby control desk who can see the operations at all times. He also signals the push out operator when another billet is required.

★ ★ ★

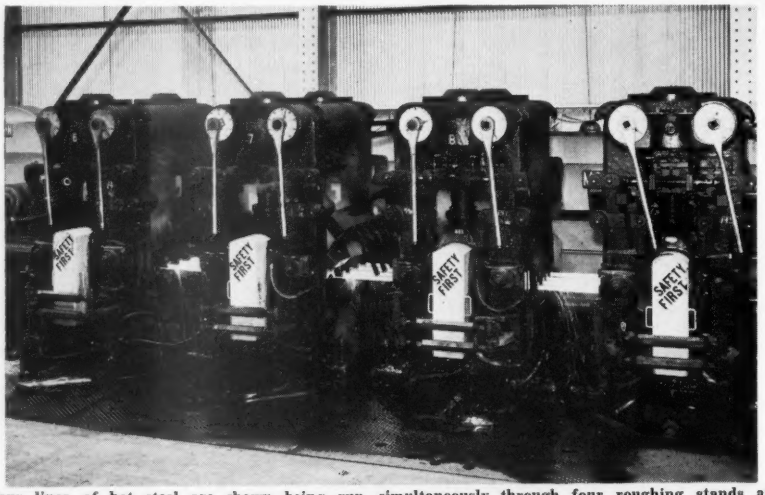
For rolling sizes 3/8″ and under there are 23 rolling stands in tandem, starting with five 18″ diameter roughing stands; four 16″ and six 13″ intermediate stands; and eight 12″ finishing stands. The final product from the finishing pass is coiled on laying type reels and discharged onto a series of flat conveyors which in turn transfers the coils to a hook conveyor for delivery to the rod inspection and loading area.

★ ★ ★

For sizes larger than 3/8″ the same roughing and intermediate stands are used but the rods from No. 15 stand are diverted through repeaters into two 13″ looping stands for finishing and then the rods are delivered to pouring type reels. These reels discharge the coils onto the same system of conveyors as mentioned above.

★ ★ ★

All of the roll stands of the mill are of cast steel and equipped with screws operated through worm gears for accuracy of top roll adjustments. The botton rolls are adjustable to maintain correct pass elevation. The stands are equipped with oil film bearings to maintain accuracy of sections being rolled with a minimum of adjustment.



Four lines of hot steel are shown being run simultaneously through four roughing stands at American Steel & Wire's Cuyahoga Works No. 1 Red Mill. This new rod mill consists of 25 reducing stands—all much like those shown—and can roll all sizes of rods from .218″ up to 1½″ in diameter.

Marshalling up 13,500 horsepower, ten motors drive these 25 stands through pinion housings and gearing—all fully enclosed in oil tight casing. Oil is continuously supplied from central lubricating oil systems, located below the mill's operating floor. The different kinds of oil maintained at the proper operating temperatures by heating and cooling mechanisms are constantly being filtered and cleaned of all water and impurities.

★ ★ ★

As the finished rods are delivered by the last finishing stand they are conveyed in pipes to the proper reel. Each of these delivery pipes contains a series of water spray nozzles for reducing the temperature of the rods as much as desired prior to their entering the reels. Directly following the spray section, each pipe contains a water eliminating section which prevents cooling water from getting into the reels. The water in the pipes is automatically tripped on and off as rod enters or leaves the pipe.

★ ★ ★

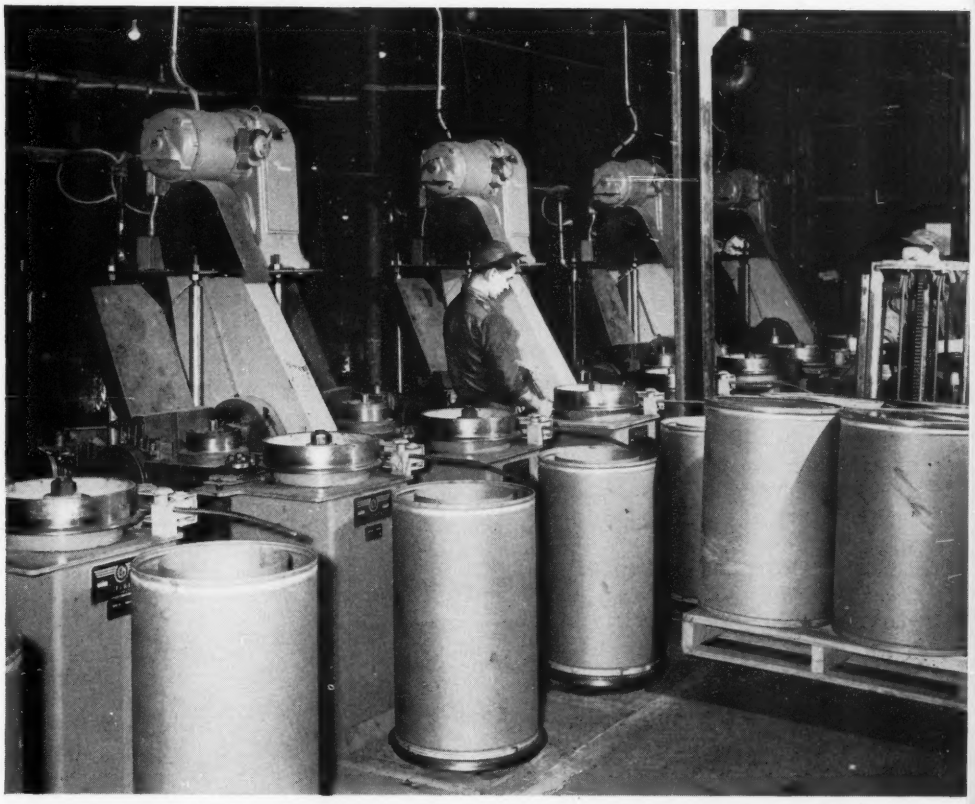
Because of the high delivery speed of the smaller sized rods, the laying reels are equipped with forced air cooling which furnishes a high volume of cool air down through the coils. Each reel has a separate blower and again, no human hands are needed to automatically shut off the air just prior to the coil being discharged onto the drag conveyor. The amount of air to be delivered to the individual reel can be varied to control the desired rate of cooling for different analyses of rods. Each reel is driven by a separate adjustable speed motor interlocked with the speed of the last finishing stand to insure correct speed synchronization at all times between the reel and the finishing stand.

★ ★ ★

The pouring reels which receive and coil the rods from the two looping stands are of the latest design and produce coils with outside diameters of 40″. Provision has been made for increasing this to 48″ if desired. The reels, which are also air cooled, are driven

(*Please turn to page* 810)

DRAW-PAK† PAYS MORE AND MORE!



MADISON WIRE COMPANY NOW OFFERS HIGH CARBON AND LOW CARBON SPECIALTY WIRES DRAW-PACKAGED!

The installation of COULTER & McKENZIE DRAW-PAK equipment has enabled Madison Wire Company, Buffalo, N.Y., to supply both high carbon and low carbon specialty steel wires in 500 lb. Payoffpaks. Wires within the size range of .010″ to .062″ diameter in a variety of finishes—tinned, drawn galvanized, and liquor finish are now available Draw-Packaged. Some of the advantages are: Payoff speeds up to 3000 ft. per minute; neat, well protected packages containing up to 600 lbs. in a single length of wire; and maximum freedom from tangles and scrap loss.

A few of the applications on which the Draw-Packaged wire has shown definite advantages are: Speedometer Shaft Wire; Hose Reinforcement Wire; Vacuum and Defroster Hose Wire; Heddle and Reed Wire; Hairpin, Pin, and Clip Wire; Staple and Stapling Wire; Flexible Shaft Wire; Rope and Aircraft Cable Wire.

To see how DRAW-PAK can pay off for you, write for more information today.

†Trademark

Patent No. 2,732,060 — other U.S. and foreign patents pending.

771 WATER STREET
OPPOSITE RAILROAD STATION

TELEPHONE EDISON 5-1101
LIEBER'S CODE "MACKENZIE"

THE COULTER & McKENZIE MACHINE CO., INC.

BRIDGEPORT 3 CONNECTICUT U.S.A.

Improved Polyvinyl Chloride Insulation For 105°C Service

By B. W. Hodges, J. L. Foster and H. L. Wuerth
B. F. Goodrich Chemical Company
A Division of
The B. F. Goodrich Company
Cleveland, Ohio

This paper was delivered at the Fourth Annual Signal Corps Wire and Cable Symposium at Asbury Park, N. J., on December 6, 1955.

The steady growth in the use of vinyl insulated wire during the past ten years has been marked by the gradual broadening of the service temperature range. Approximately six years ago Geon 8630 became the first vinyl compound to receive approval for appliance wire applications at 105°C. This led to other constructions taking advantage of the improved high temperature aging properties. The 105°C type compounds have made possible the following constructions:

1. **105°C appliance wire with wall thicknesses of 1/64" and 1/32" rated at 300 and 600 volts.**
2. **90°C appliance wire rated at 1000 volts.**
3. **90°C appliance wire with 8 mil wall.**
4. **80°C oil resistant wire.**

★ ★ ★

The successful operation of this type of high temperature compound on UL approved wires has led to additional commercial and military applications for 105°C materials. Radio and television hook-up wire, aircraft wire and similar types must now meet high temperature usages. Specifications have been written by individual aircraft companies, individual electronic component producers, as well as by military groups.

★ ★ ★

With these increasing demands for 105°C compounds, requirements for these high temperature materials have also been on the upswing. Low temperature properties (to -55°C) have been added to 105°C high temperature requirements. In addition, increased abrasion resistance, good insulation resistance after humidity cycling, improved heat aging properties have been added as necessary properties.

★ ★ ★

To meet the more stringent requirements for abrasion and deformation resistance, a semi-rigid insulation was required. B. F. Goodrich Chemical Company has been working on all of these requirements and introduced to the industry several months ago Geon Plastic 8800.

★ ★ ★

Table I offers comparisons of the semi-rigid Geon 8800 with

Table I

U. L. 105°C Radio Hook-up Wire

Construction details: 7/28 T. C. (.037) 16 mil wall

Test	Requirement	Standard 105°C	Geon 8800
Original tensile psi	1500 (min.)	2800	3800
Tensile 4 days/136°C	----	3000	3900
Tensile 60 days/113°C	70% Ret.	3200	4000
Original Elongation %	100 (min.)	300	300
Elongation 4 days/136°C	----	285	295
Elongation 60 days/113°C	----	255	300
Retention Elongation			
4 days/136°C	----	95.0	98.5
60 days/113°C	70% (min.)	85.0	100.0
Deformation at 121°C	50% (max.)		
16 mil wall		31.6	29.7
32 mil wall		34.5	28.8
Flexibility 60 days/113°C	----	Pass	Pass
Heat Shock 1 hr./121°C	----	Pass	Pass
Cold Bend -10°C	----	Pass	Pass
Slow Compression	35 pounds/min.	Pass	Averages 20% better on all wall thicknesses
Flame Test	----	Pass	Pass
Dielectric Strength			
Original	2KV	Pass	Pass
Aged 60 days/113°C	2KV	Pass	Pass
Aged 4 days/150°C	2KV	Fail	Pass
Insulation Resistance			
at 15.6°C	1.5 megohms/1000 Ft.	175	4000
at 125°C	----	0.156	0.888
Penetration Test			
at 105°C	10 minutes (min.)	Pass	Pass

present standard 105°C compounds.

★ ★ ★

Additional property comparisons are now under way. The data thus far developed, and as illutrated in Table I, indicates a superior heat aging compound, a tougher compound and a better electrical compound. This data would indicate two possibilities in regard to 105°C appliance wiring.

1. **The properties of Geon 8800 are such that a thinner wall wiring construction might be approved for 105°C wiring.**
2. **The properties of Geon 8800 are such that temperature ratings higher than 105°C might be approved for the normal wire constructions now used in the industry.**

★ ★ ★

The comments previously made under 105°C appliance wiring could also be applied to aircraft wiring requirements. The improved properties of the new insulation should make possible:

1. **Thinner walls with equivalent properties with a possible significant overall weight reduction in wire requirements.**
2. **A wire with improved temperature rating, which appears now to be needed in the aircraft industry.**

★ ★ ★

The added toughness of Geon 8800 may make possible the use of wire without an outer covering where such coverings are now required because of the physical properties of currently approved compounds.

★ ★ ★

The fungus resistance properties of Geon 8800 as indicated in Table IV and the improved toughness properties previously discussed may make possible aircraft wiring constructions without added outer coverings where resistance to certain hydraulic fluids are not required.

★ ★ ★

These data indicate an improved compound offering wider margins for critical operating conditions. The trend, therefore, as indicated previously, is to consider Geon 8800 for service at temperatures higher than the 105°C rating. The maximum rating has not yet been resolved, but the improved heat aging characteristics at 136°C and 150°C suggest the possibility of higher ratings.

★ ★ ★

Heat stability characteristics at 175°C in comparison with 105°C compounds illustrate further the superior aging properties suggesting higher service temperature performance.

★ ★ ★

The comparison of properties is shown in the table showing rela-

Table II

Construction details	NAS - 702 (105°C)		
19/32 T. C. (.041) 20 mil wall			
Test	Requirement	Standard 105°C	Geon 8800
Original tensile psi	1800 (min.)	2800	3800
Tensile 60 days/113°C	70% ret.	3200	4000
Original Elongation %	75% (min.)	300	300
Elongation 60 days/113°C	70% ret.	255	300
% Retention Elongation		85.0	100.0
Life Cycle 5 days/121°C			
Bend Test		Pass	Pass
Dielectric Test		Pass	Pass
Cold Bend 1 hr./ - 55°C 180° bend 3" mandrel Dielectric Strength	3KV	Pass	Pass
Flammability		Pass	Pass
Insulation Resistance			
at 20 - 25°C	100 megohm/1000 ft.	140	3500
at 94 - 96°C	0.10 megohm/1000 ft.	0.035	0.500

Table III

Construction details	MIL - W - 16878B 100°C Type		
7/28 T. C. (.037) 16 mil wall			
Test	Requirement	Standard 105°C	Geon 8800
Original tensile psi	1200 (min.)	2800	3800
Tensile 4 days/136°C	± 50% change (max.)	3000	3900
Original Elongation %	75 (min.)	300	300
Retention Elongation 4 days/136°C	-10% change (max.)	95.0	100.0
Dielectric Strength	3KV	Pass	Pass
Insulation Resistance at 25°C	30 megohm/1000 ft.	125	3200
Heat resistance 4 days/150°C Dielectric Strength	3KV	Marginal	Pass
*Cold Bend 4 hrs./-54°C 2" mandrel Dielectric Strength	3KV	Marginal	Pass
Flammability	30 sec. (max.)	Pass	Pass

*Test run without outer covering

Table IV

105°C

Construction details MIL - W - 5086 (Tentative)

7/28 T. C. (.037)
16 mil wall

Test	Requirement	Standard 105°C	Geon 8800
Original tensile psi	----	2800	3800
Original Elongation %	50 (min.)	300	300
Retention Elongation%			
4 days/136°C	90 (min.)	95.0	98.5
60 days/113°C	70 (min.)	85.0	100.0
Cold Bend -55°C	Pass	Marginal	Pass
Abrasion Resistance		Pass	Pass*
Humidity Cycling MIL - E - 5272 15 cycles	100 megohms/200 ft. (min.)	75	6000
Insulation Resistance at 95°C 15 min. in 5% NaCl Solution	1.5 megohm/50 ft. (min.)	0.706	10.8
Fungus resistance		----	Pass*

*Run without outer covering

tive heat stabilities of the compounds in question at 175°C aged up to forty-eight hours.

★ ★ ★

This table indicates that Geon 8800 after 48 hours at 175°C shows better stability than a standard 105°C compound at 24 hours.

★ ★ ★

The higher insulation resistance values at 15.6° and 125°C also merit consideration.

Insulation Resistance

#20 AWG with 16 mil wall

	Standard 105°C	Geon 8800
Insulation resistance at 15.6°C	175 megohms/ 1000 feet	4000 megohms/ 1000 feet

Independent work done on Geon 8800 in which compounds were aged up to 60 days at 120°C show the following property changes after this rather severe aging test.

1. **Color retention—slight change**
2. **Tensile strength—no change**
3. **Elongation—no significant change**
4. **Low temperature brittleness — slight change only**
5. **Hardness—no significant change**
6. **Stiffness—no significant change**
7. **Electrical properties—very slight change**

★ ★ ★

Complete performance data for service at temperatures over 105°C were not available in time for this presentation, but the investigation is being continued.

★ ★ ★

Extrusion Conditions for Geon 8800

Previous papers at past symposiums have indicated the need for preheating of conductors for obtaining optimum properties from certain types of compounds in certain constructions. With a material such as Geon 8800 we would like to point out the conditions necessary for attaining the optimum properties of this compound. These can be listed very simply as follows:

1. **Conductor — particularly for thin walls and small wires—should be preheated to about 325°F. This temperature will have to be balanced against any free stripping requirements, etc., of the finished construction.**
2. **Stock temperature at the die face should be 390-395°F.**
3. **Die should be on size.**
4. **Die land should be at least twice the die opening and preferably longer.**
5. **Insulation should be semi-annealed by use of hot (170-180°F) water in the cooling trough.**

Table V

Heat aging tests

on #20 AWG with 20 mil wall

Per cent retention of elongation

4 days at 136°C	100%
7 days at 136°C	100%
4 days at 150°C	91%

In conclusion, Geon Plastic 8800 offers a wider range of physical and electrical properties for the more stringent commercial and military hook-up or appliance wire applications now specified or anticipated.

Have You Made Arrangements with Your Company to Attend the

ANNUAL CONVENTION OF THE WIRE ASSOCIATION IN PITTSBURGH?

Now is the time to make your plans. If you are an Association member a hotel reservation card will be mailed to you. If not a member and you'd like to attend, write for the reservation card. You'll be welcome.

RICHARD E. BROWN, *Executive Secretary*

453 Main Street • **Stamford, Conn.**

Steel Cable Reel Repair Demonstration

To show users of cable reels the ease with which repairs can be made in their maintenance departments, this demonstration was staged at the Princeton University Armory. While improvised tools may be used, it was evident that special tools designed particularly for the work greatly reduce the time and expense of restoring damaged reels to a condition of serviceability.

Steel cable reels of toroidal construction are not easily damaged and many of them go through periods of use in excess of fifteen years before retirement from active service.

★ ★ ★

However, in spite of shipping precautions, a reel, for example, may be dropped from a truck with its multi-thousand pounds of cable and something is bound to give on impact with a hard surface.

★ ★ ★

On March 29th at the Princeton University Armory, **The George Evans Corporation** of Moline, Illinois, staged a demonstration of how reel drums, flanges, tires and the flange reinforcing flutes may be repaired and the reels restored to serviceability. The company produces steel cable reels in sizes ranging from 30 inches to 96 inches in diameter.

★ ★ ★

Damaged reels had been shipped to the Armory by customers prior to the affair, where G. Hilding Larson, Evans' Plant Superintendent, and Albin Johnson, one of their machinists, straightened the reels and restored them to usefulness. This was accomplished by means of a special reel repair kit designed and made by The George Evans Corporation.

★ ★ ★

This kit, which is illustrated elsewhere in this article, contains all of the repair tools that experience has demonstrated are necessary to cover practically any type of reel damage with which a user may have to cope. Not a part of the kit, but essential to the work, was an arc welder for mending actual breaks in the metal.

★ ★ ★

The first reel repaired, a big 72 inch standard type, had a badly dented drum and a number of dented flutes, or reinforcing ribs. By means of the drum shoes to which a hydraulic drum had been fitted, and a hammer, the drum quickly re-assumed its normal contour. The flutes were fitted outside and in with the male and female spoke straightening dies, hydraulic pressure applied through a clamp, and the dents, under ten tons of pressure, straightened out to their original form.

★ ★ ★

A ten year old 56 inch reel, the flanges of which had been considerably bent out of true with corresponding other damage, was tackled next. Hydraulic pressure on the flanges, tires and other distorted parts brought the reel into a trued condition. Dented flanges were re-formed and re-welded to provide a firm anchorage.

★ ★ ★

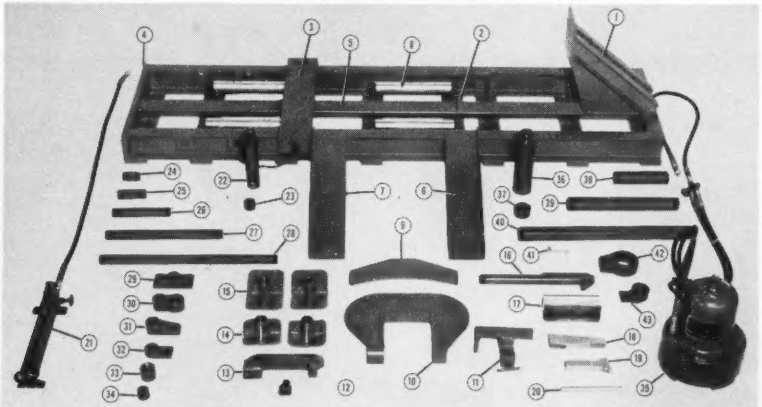
A third reel of the same size, seemingly beyond repair was then rolled onto the cable reel stand. This one apparently had fallen from a considerable height onto one flange with sufficient force to fracture the tire, push in an entire quarters section some four or five inches and badly twist the ribs and drum and its supporting member. Using all the tools and the welding apparatus this, too, was renovated to a point of utility for many more trips.

★ ★ ★

Evans officials explained that while this last demonstration was made through the use of the tool kit, it would have been quicker and more economical to cut out the damaged section and insert an equivalent part at that point. However, it did show what could be done with just the repair tools.

★ ★ ★

In making reel repairs the economics of any particular job must be considered. Conceivably, a reel may be so badly mutilated through



Repair Kit: 1.—Reel Stop and Pin, 2.—Backing Block, 3.—Sliding Back-up Plate and Pins, 4.—End Plate, 5.—Ram Holder—Angle, 6.—Ramp Rail, Right, 7.—Ramp Rail, Left, 8.—Rollers (4), 9.—Tie Straightening Bar, 10.—C-Clamp 9″ x 7½″, 11.—Tire Hold Down, 12.—Anvil, 13.—C-Clamp 1½″ x 7″, 14.—24″ Drum Shoes, 15.—30″ Drum Shoes, 16.—Tire Straightening Bar Clamp, 17.—Spoke Form—Female, 18.—Spoke Form—Male, 19.—Spoke Hand Dolly, 20.—Spoke Hand Swage, 21.—Hydraulic Pump Hand (with hose), 22.—Ten Ton Ram, 23.—Serrated Saddle, 24.—3″ Extension Tube, 25.—5″ Extension Tube, 26.—10″ Extension Tube, 27.—20″ Extension Tube, 28.—30″ Extension Tube, 29.—Flat Base Plate, 30.—Extension Tube Clamp Head, 31.—Clamp End Toe, 32.—Spreader Ram Toe, 33.—Tube Coupling, 34.—Short Male Connector, 35.—Hydraulic Pump—Electric (control valve and hose), 36.—Twenty Ton Ram, 37.—Serrated Saddle, 38.—10″ Extension Tube, 39.—20″ Extension Tube, 40.—30″ Extension Tube, 41.—Clamp Toe Lock Pin, 42.—Toe Lift, 43.—Spreader Ram Toe. * * * * * * *

Figure 2. FORCING BENT REEL FLANGE BACK INTO VERTICAL LINE with 20-ton ram, powered by electrically operated hydraulic pump. At the pump control is Albin Johnson, repair machinist of The George Evans Corporation. * * * * * * * * * * *

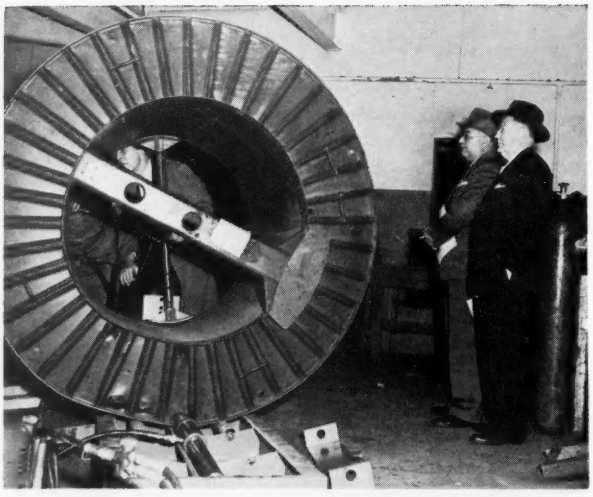


Figure 3. DOUBLE PLAY IN REPAIR DEMONSTRATION. In the foreground, a 20-ton ram attached to a hydraulic pump forces a bent flange back into position. Inside the drum, a 10-ton ram hooked onto a hydraulic pump pushes out a dent in the drum. * * * * * * *

mishandling, that repairs are not justified, but it was pointed out that while only a very minor percentage of these reels require repairing in their long years of service, the great majority of reel repairs can be made economically. Average reel repair costs run only approximately three dollars per reel when the proper equipment is employed.

★ ★ ★

Persons attending the demonstration were **T. R. Holton** and **B. C. Gould,** American Steel & Wire Division, United States Steel Corporation; **R. M. Zangler, Jr.,** Anaconda Wire & Cable Company; **Kenneth Lavender,** Canada Wire and Cable Company Ltd.; **Ray Smith,** General Electric Company; **Leo Meinert,** National Electric Products Company; **G. C. Stinson,** Northern Electric Company, Ltd.; **E. H. McCann,** Phillips Electrical Company, Ltd.; **L. D. Fitler,** Rome Cable Corporation; **Robert Patterson,** Simplex Wire & Cable Co.; and **Joseph Kelly,** Western Electric Company.

★ ★ ★

At a dinner at the Princeton Inn the night before, **George L. McCandless,** Vice President, and **C. R. Evans,** President, George Evans Corporation, who were hosts for the occasion, welcomed their guests and introduced men from the home office, including **Harry V. First,** Chief Engineer. Purpose of the demonstration was then explained, including plans for the following day and a historical background of the company. Mr. McCandless read a telegram received from one of the largest users of Evans steel reels. This telegram, in response to a request to send some damaged reels to the meeting, expressed the user's regret at being unable to locate even one damaged reel.

Figure 4. HYDRAULIC PRESSURE AND THE USE OF OPPOSITE DIES quickly restores damaged flute to original formation. * * *

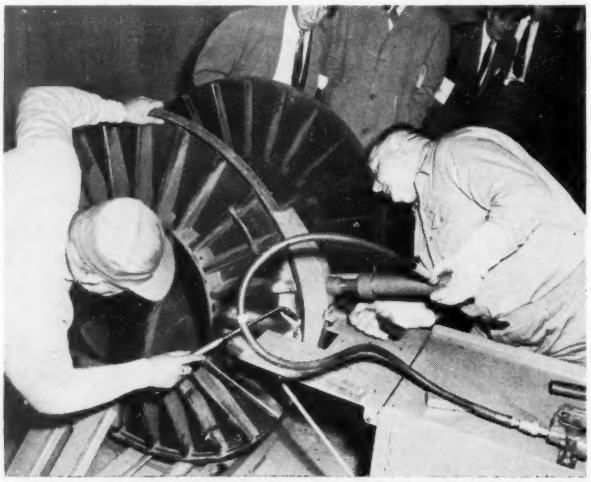
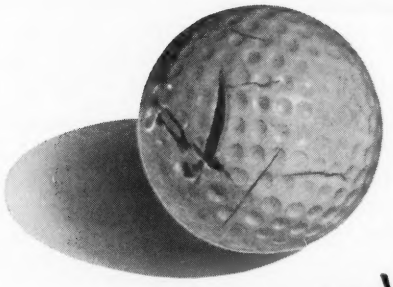
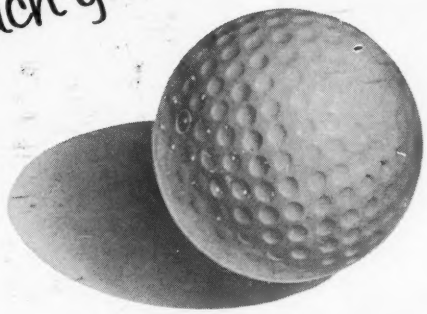
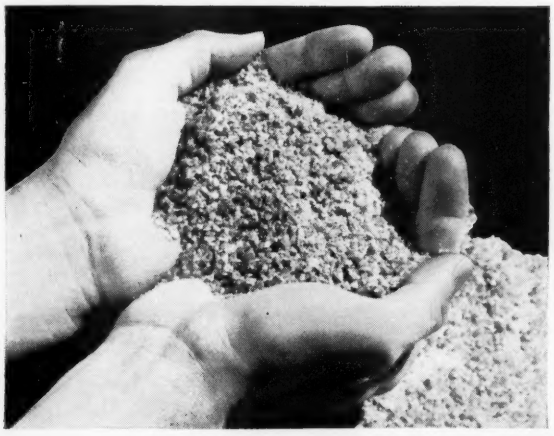


Figure 5. HEAT AND HAMMER PLUS HYDRAULIC HEAVE-HO! They play important parts in restoring roundness to a flat rim on an Evans steel reel. Holding the torch, on the left, is G. Hilding Larson, shop superintendent in the Moline plant of The George Evans Corporation. Hammering, on the right, is Albin Johnson, repair machinist. *



If you were a golf pro, which golf ball would you use?





You'd use the new one of course. You couldn't afford to risk your winnings on the erratic flight of an old ball—just for a small savings.

It's the same with diamond abrasives. You can't afford to risk your profit on the performance of reclaimed diamond. It's too big a gamble for a small economy. Play to win with dependable diamond—virgin diamond. **ALL ELGIN DIAMOND is virgin diamond . . . say ELGIN and be sure!**

An $8,000 handful of pure, virgin diamond bort ready for crushing and grading to produce ELGIN Diamond.

ABRASIVES DIVISION
Department G

ELGIN NATIONAL WATCH COMPANY

ELGIN, ILLINOIS

Wire Packaging Method Cuts Shipping Costs

Significant reductions in shipping costs for steel wire are made possible by a new reelless coil package announced by **National-Standard Company** of Niles, Michigan.

★ ★ ★

Especially designed for handling bead wire used in the manufacture of automotive tires, the new coil package replaces the traditional method of shipping the wire on heavy reels.

The wire packaging method described here, while designed for bead wire, has interesting possibilities for other applications.

This development offers wire to manufacturers in tightly-bound coils, spiral wrapped in heavy paper and palletized for easy handling. The packaged wire is supplied in two coil sizes: two 1000-pound coils or four 650-pound coils, interlocked with steel strapping on a wooden pallet.

In addition to reducing tare weight substantially, the reelless coil eliminates empty reel returns, conserves storage space and facilitates rotation of inventory, as well as reducing unloading and in-plant handling.

★ ★ ★

Specially-engineered equipment —patents pending—simplifies handling the coils in the user's plant. It consists of a point-of-use pneu-

(*Please turn to page* 811)

Figure 1. After strapping is removed, the pneumatic coil lifter is inserted and air pressure is applied to achieve pressure grip on inside circumference of the coil. * * * * * *

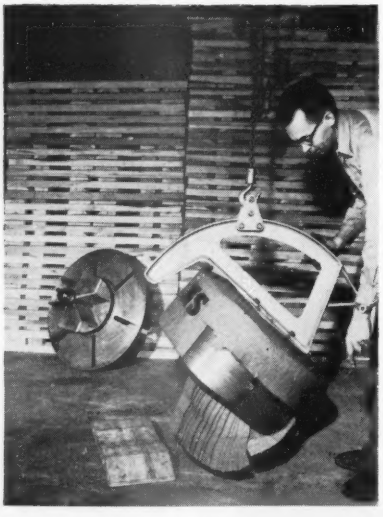


Figure 2. After coil is lifted from pallet, rip wire is pulled to remove paper wrapping and the coil is swung into position on the block.

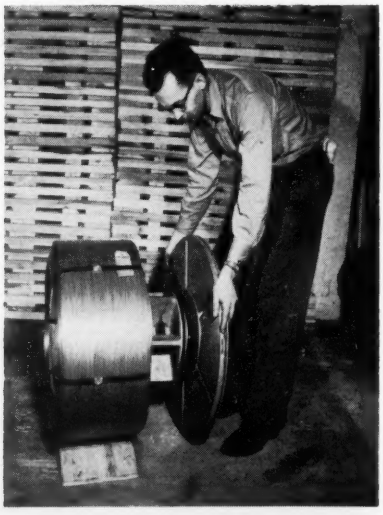


Figure 3. Let-off reel spider is inserted through the core of the wire coil. * * * * *

Figure 4. Opposite flange is mounted and held in place by 3-inch nut. Lightweight flanges are of cast aluminum. * * * * * *

Figure 5. Inflating the let-off reel draws the flanges together, exerting a squeezing effect of the wire during pay-off. * * * * *

Figure 6. After mounting on let-off stand, the steel bands are cut and pulled out through the radial slots in the flange. The wire is now ready for paying off. * * * * * * *

Nail Packaging Method Increases Sales

By Webster Brumbaugh

Assistant Director, Sales Development

Hinde and Dauch

Sandusky, Ohio

What weight unit do our customers prefer?

★ ★ ★

A young wire-nail manufacturing firm asked itself this question. The result? A revolution in nail-packing and a permanent farewell to the old-fashioned nail keg. Included in the firm's new packaging program are (1) two completely different kinds of package, for bulk and retail quantities of nails, (2) a mechanized packaging method which increases packing and shipping efficiency radically, and (3) a new method of merchandising nails, well adapted to the "self-service" retail trend.

★ ★ ★

The firm that asked the question was the **Wire Products Company** of Hortonville, Wisconsin. The company was organized and began production in 1948. Most of its equipment, while completely new, was not fundamentally different from that used in automatic nail manufacture by many of its competitors. Only one operation, packaging, offered a chance to apply new thinking. The plan that was evolved has brought significantly increased sales, plus a definite costs advantage over old-line competition.

This is an "experience" story that we hope will prove of value to nail users and manufacturers in the interest of efficiency and cost reduction.

★ ★ ★

Experimentation to improve nail packaging began during the company's first year of operation in 1948. Modern materials handling methods required a better package than the old-fashioned wooden nail keg, they felt.

★ ★ ★

The nail keg did not palletize well, and was likely to split under the vertical pressure of high stacking. It weighed too much, and its round shape meant inefficient use of carrier space, increasing the freight bill to the customer.

★ ★ ★

The need was for a low-cost light-weight package, with great vertical strength—one that could be palletized easily, preferably rectangular for solid packing into carriers. But what packaging material met all these conditions, and offered a "nail-resistant" surface to boot?

★ ★ ★

The answer was a modern heavy-duty corrugated box. The surface of corrugated board, properly handled, is not punctured by the contents of the package, while package shape and weight are ideal for shipping purposes. In 1950, the firm adopted as standard a 100-pound corrugated box manufactured by **Hinde & Dauch.** This box they planned to use as the basic unit package for all nails manufactured by them.

Customer Preference Expressed

This improvement in the basic package drew enthusiastic comments from hardware dealers and

Figure 1. Worker inserts liner into corrugated nail shipper. Outside shell of shipper can be broken in half by customer to open package. Liner adds vertical strength in shipment, and forms inner box when package is opened.

Figure 2. Worker stitches bottoms of heavy duty corrugated boxes used to ship nails in bulk.

Figure 3. Five pound retail boxes of nails are filled at this automatic loading and weighing machine.

Figure 4. Assembled boxes move by conveyor to loading machine where they are filled with accurately weighed quantity of nails.

lumber dealers, who found the nail boxes easier to handle and store than nail kegs. But with the cheers came the crucial question: if you can package nails in big boxes, why not package them in more convenient weights?

★ ★ ★

Such comments from the field started the company management on a long-term project—re-evaluating the assumptions behind nail packaging. Was the industry's standard package—100 pounds—the best, or were there sizes and styles of nail package that would serve the customers better?

★ ★ ★

Checking their market, it was discovered that they were serving two distinct classes of purchaser. The first was the large user of nails, such as the lumber dealers, who wanted to purchase nails in bulk, but packaged in the most convenient way to be taken directly to a job and used there without re-packing or special handling equipment. The second was the retail purchaser, who wanted to buy medium-sized quantities of nails at his hardware store, but who was increasingly impatient with the time-consuming traditional method of weighing nails out on a scale and wrapping them up in three thicknesses of paper, tied with string.

★ ★ ★

The logical solution to the needs of both groups was **two** different kinds of package—one for bulk, one for retail sales—both different from the weighty 100-pound unit which had been considered standard.

Bulk Box

After extensive research and dealer consultation, a new bulk corrugated box—based on a smaller unit size, and a different opening method was adopted. The new box, a heavy duty type designed by box manufacturer, holds 50 pounds of nails, the quantity deemed easiest to handle, store, and use in a single package. One man can easily transfer boxes of this size from place to place. At the same time, because of their

(*Please turn to page* 812)

Figure 5. Another loading machine. Filled boxes are sealed with glue for solidity during shipment.

Figure 6. Packaging nails in corrugated boxes makes handling easy. Fork lift truck moves palletized loads as a unit, insures efficient use of storage and carrier space.

Precision Spring Manufacturer Employing Electronic Controls

By H. H. Passolt
Chief Metallurgist
Johnson Steel and Wire Co.
Worcester, Mass.

New methods to control quality are always of interest. This story describes the use of electronic devices to assure uniformity of size and tension in spring manufacture.

Electronics are helping "build" springs for **The Connecticut Spring Corporation,** one of the nation's largest manufacturers of small precision springs.

★ ★ ★

Considered by many to be next to impossible only a year ago, electronic devices are being used to control quality of springs so small they can't be measured manually.

★ ★ ★

In another application at the company's Hartford, Conn., plant, electronic equipment has been integrated on a standard wire coiling machine with a resulting 20 percent increase in efficiency.

★ ★ ★

Stanley D. Fisher, Connecticut Spring's president, insists that springmakers must have steadily advancing technology to keep pace with demands placed upon them by spring users. For that reason, development and research are emphasized constantly at his company.

★ ★ ★

Half of the firm's business is made up of jobs requiring 100 percent inspection. Springs start in the .003 music wire range and in increments of .001, extend up to .300. As one of the major consumers of fine specialty wire in the East, Connecticut Spring relies on a **Pittsburgh Steel Company** subsidiary, the **Johnson Steel & Wire Company,** for much of its music wire requirements.

★ ★ ★

To illustrate its attitude towards springmaking, Connecticut Spring uses the word "build" to describe manufacture of a spring.

★ ★ ★

"Given conventional equipment," explains John A. Torda, general sales manager, "any company can wind wire into a spring. 'Building' a spring so that it performs its basic function of delivering energy according to design and specification requires much more. The difference is all in the technique of processing and in the inspection. After all, the only final proof of a spring is a finished spring. There is no other way of predicting accurately. All you can do is start with the best available wire, control every stage of fabrication and then measure the results."

★ ★ ★

Mr. Torda knows whereof he speaks, for precision springs his company makes are used in every major industry. The plant turns out an average of 100 different parts a day in annual quantities from one to 10 million. Applications range from typewriters to toys, guns to aircraft, computers to electronic instruments.

★ ★ ★

Figure 1. Rigid quality standards are demanded by Connecticut Spring Corporation. Wire for precision springs must be flawless to avoid needless rejects. Half of the firm's business is made up of jobs requiring 100 percent inspection, which automatically can mean a high rejection rate. ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★

From an overall standpoint, the toughest job in the shop is a precision compression spring from Hamilton-Standard Division of **United Aircraft Company.** Part of a reciprocal engine's carburetion system, the spring controls the supply of gasoline reaching the engine.

★ ★ ★

It is tapered from a top O.D. of 1 inch to a bottom 5/8-inch O.D. Free length is 1½ inches with 8½ coils in that distance. Distance between coils varies from 3/16 to 1/8 inch. Made to AMS Specification 5112, the spring uses Johnson's .090 Music Wire. It weighs only half an ounce.

★ ★ ★

During a plane's takeoff, 30 pounds pressure is exerted on the spring to provide maximum fuel flow. Normal aircraft cruising range provides 22 pounds compression pressure. Holding pressure is four pounds.

★ ★ ★

Before this wire ever starts through the production process, it is subjected to a rigid inspection.

The supplier is required to certify the AMS 5112 qualities when it ships the wire. But upon arrival at the Hartford plant, a complete test of physical properties is undertaken to verify the specification. This isn't all, because Hamilton-Standard insists upon a wire sample with every lot of finished springs.

★ ★ ★

The Connecticut Spring Corp. isn't forced to do its separate testing: the fact that it does is just another assurance of quality.

★ ★ ★

Wire, shipped in 50 to 60-pound coils, is run on a Torrington W-12 coiler, which can handle ranges up to .149 wire.

★ ★ ★

After the spring is coiled, it is subjected to stress relieving done in 30-minute to 2-hour cycles at temperatures from 450 to 600 degress Fahrenheit. Exact heat-treating time is determined by a trial run made on each Johnson shipment.

★ ★ ★

The crucial aspect of heat treating the Hamilton-Standard spring stems from the fact that the different sized coils tend to contract to different degrees. Thus, Connecticut Spring must apply its full know-how to retain design and physical properties through the heat treating cycle.

★ ★ ★

After heat treating, the spring is ground flat top and bottom to a squareness of one degree limit. Hand finishing is required to remove burrs which would tend to set up abrasive scoring and galling.

★ ★ ★

Next comes a 100 percent test of five different check points to tolerances as limited as plus or minus .003 to .008.

★ ★ ★

A sub-contractor then gets the springs for brazing of a high-carbon key on the bottom of the spring. Care must be taken during brazing to see that the spring is shielded properly to avoid excessive heat transfer that could anneal the first two turns.

(*Please turn to page* 814)

Figure 2. John Torda, sales manager, left, checks production drawings to see that the aircraft spring being wound on a standard coiler meets specifications. He uses the word "build" to describe manufacture of spring.

Figure 3. The final proof of a spring is a finished spring. That proof cannot be predicted accurately. In Sales Manager Torda's words, "All you can do is start with the best available wire, control every stage of fabrication and then measure the results." ★ ★ ★ ★ ★ ★

Pioneers of the Past
Washburn—Moen—Rice

In the April issue of Wire and Wire Products we published the story of Ichabod Washburn. As a sequel to this story we are happy to be able to print this additional portion of the American Steel and Wire saga through the courtesy of the corporation and of Wireco Life, in which this bit of history appeared as a part of the company's recognition of its 125 years of continuous operation.

One of the largest of the many individual companies which were joined to form the **American Steel & Wire Company** in 1899, was the **Washburn & Moen Manufacturing Company.** Its plants included those at Worcester, Massachusetts; Waukegan, Illinois; and San Francisco, California.

★ ★ ★

Another distinction due the Washburn & Moen Manufacturing Company was that it was also the oldest in the wire industry. Its history dated back to 1831, at which time **Ichabod Washburn** began the 125-year tradition of fine craftsmanship in wire drawing that the American Steel & Wire is celebrating this year.

★ ★ ★

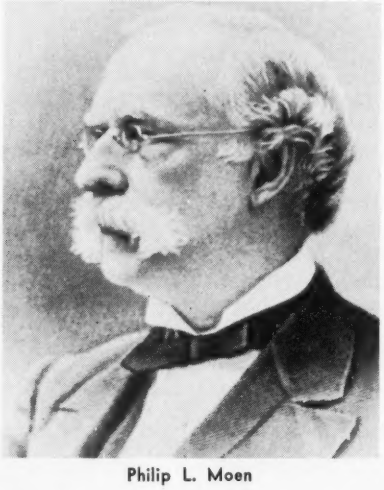
The Washburn & Moen story centers around three outstanding personalities: **Ichabod Washburn** (whose story was published in April), **Philip L. Moen,** and **William E. Rice.**

★ ★ ★

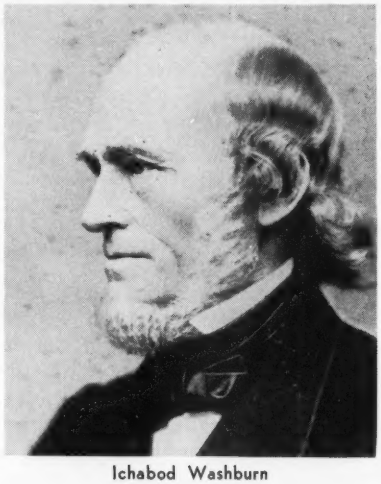
In this issue we present the story of **Philip Moen** and **William Rice.** Together they helped raise to manhood the infant enterprise created by **Ichabod Washburn.**

Philip L. Moen

Philip Louis Moen was born in



Philip L. Moen



Ichabod Washburn

Wilna, New York, November 13, 1824. His parents, Augustus R. Moen and Sophie A. Le Clanche were French. Augustus came from France early in the nineteenth century and, as soon as he made a home for his bride-to-be, Sophie came to him from Paris and they were married.

★ ★ ★

In 1830 they moved from Wilna to Collinsville, Connecticut, leaving there in 1836 to make their home in Brooklyn, New York. At this time Augustus became a hardware merchant in New York City.

★ ★ ★

One of the chief outlets for wire manufactured by Ichabod Washburn was through **Augustus Moen,** who acted as Washburn's agent. This arrangement required frequent trips to New York by Washburn and he soon became interested in young Philip, who was working for his father selling wire.

★ ★ ★

In order that the young man might be better able to handle the sale of wire, he was invited to come to Worcester to learn about its manufacture. It was here, during the week he spent as a guest in Washburn's home, that young Philip met Washburn's eldest daughter, Eliza.

★ ★ ★

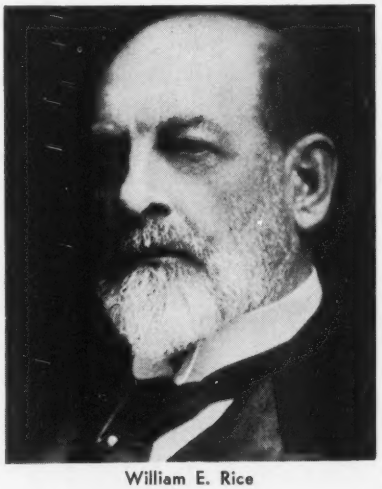
Philip soon found it necessary to come to Worcester again to learn more about wire. After several such visits it became apparent that his interest was not all in wire.

★ ★ ★

A brief romance was followed by the marriage of Philip and Eliza, after which the young couple returned to New York. Here they remained for a little more than a year, with Philip working in the hardware business for his father. At the end of that time Washburn asked Philip to come to Worcester and work for him in the wire industry.

★ ★ ★

Philip entered the business with enthusiasm and soon made a name for himself as an energetic, resourceful, and talented businessman. As a result of his good work he was taken into partnership with Washburn in 1850 under the firm name of **I. Washburn & Company,** Wire Manufacturers — Ichabod



William E. Rice

Washburn and P. L. Moen, Proprietors.

* * *

In his new capacity, Moen soon became a pillar of strength in the growing concern, bringing to it, "rare business ability, together with strict integrity, and a winning personality, with courtesy towards all employees regardless of rank."

* * *

Writing in his autobiography, started in 1866 but never finished, Deacon Washburn said of his son-in-law:

* * *

"In 1850 I took as a partner my son-in-law, P. L. Moen. In him I have had a most efficient aid in bringing up the business to its present mammoth size. While he makes no claim to be a practical mechanic, he has by his exactness, promptitude, and aptness for business generally, supplied a deficiency in myself indispensable to success. He has managed with rare ability our finances, a department of the business for which I never had the taste or inclination, always preferring to be among the machinery, doing the work and handling the tools I was used to, though oftentimes at the expense of smutty face and greasy hands."

* * *

In 1861, the firm name was changed to I. Washburn and Moen, Wire Manufacturers, and on January 2, 1865, the concern was changed from a partnership to a corporation, with the name of I. Washburn & Moen Wire Works, and a capital stock of $500,000.

Quinsigamond Iron Works

And now, let us take a quick trip back in time to cover another phase of the Washburn & Moen story. Prior to 1846, Washburn purchased all of his raw material from abroad, going to Boston to receive each shipment through the Custom House. For a time he did this personally, but later engaged a relative living in Boston, **Henry S. Washburn,** to do it for him.

* * *

The raw material consisted mostly of Swedish iron bars about 12 feet long and 1⅛ inches square. These bars were then rolled into wire rods at Fall River, Massachusetts; Troy, New York; and Windsor Locks, Connecticut.

* * *

The inconvenience of having this rolling done at such a distance from his wire mill led Washburn to look around for a suitable location for a rolling mill in Worcester. It also led to Ichabod's proposal to Henry Washburn that he come to Worcester to supervise the erection of a mill for the rolling of wire rods and take charge of its operation.

* * *

This proposition was backed financially by Ichabod Washburn and he purchased the site for $16,000 on May 18, 1846. Thus, the first rolling mill in Worcester was started. This was also the beginning of the present South Works of the American Steel & Wire Division. The original title of the concern was Quinsigamond Iron Works, Henry S. Washburn, Proprietor.

* * *

The Quinsigamond Iron Works went through several phases of proprietorships and partnerships, with Ichabod always holding the controlling interest, until September 30, 1865, when Ichabod purchased the outstanding shares and formed a new corporation called the Quinsigamond Iron & Wire Works with a capital stock of $200,000. The stockholders included Ichabod Washburn, Philip L. Moen, and William E. Rice. Moen was elected president and Rice was treasurer and general manager.

* * *

During these years, the billets used were either those from Sweden, previously mentioned, or those produced at Quinsigamond from scrap. Ever alert to meet customer's demands and produce suitable wire for special uses, Ichabod twice visited England to learn what he could of the progress there in the wire industry.

* * *

The increasing demand for wire in longer lengths, to satisfy telegraph and other services, could not be met by the small coils of rods weighing only 30 pounds. Thus American producers were faced with a serious problem. Washburn discovered that England had solved this difficulty.

At the plant of **Richard Johnson & Nephew** in Manchester, England, their manager **George Bedson** had invented, patented, and built a continuous rod rolling mill. This mill, when used in conjunction with a Siemens gas furnace, formed an equipment for rolling No. 5 size rods in bundles weighing from 75 to 150 pounds each.

* * *

This was indeed a wonderful step forward, and the installation of such a mill in Worcester was, in Washburn's mind, the one thing to be desired. However, he was now nearing 70 years of age and did not feel like making another trip to England to see if arrangements could be effected for installing such a mill in Worcester. Accordingly, in 1867, he called upon William E. Rice for assistance in this project.

William E. Rice

William Ellis Rice was born at Ware, Massachusetts, on August 6, 1833. He started to work in May, 1852, at the age of 18, with Ichabod Washburn & Company as a bookkeeper and general clerk at a salary of $50 a month. Here he remained until 1859.

* * *

In 1859, he and **Dorrance S. Goddard** joined fortunes, under the firm name of **William E. Rice & Company,** to operate a small wire plant at Windsor Locks, Conn. Goddard soon dropped out and Rice went on alone. In 1865 he sold out to Washburn and joined him as secretary and sales manager of the I. Washburn & Moen Wire Works.

* * *

It was with this background that Rice went to England to visit Bedson, thoroughly investigate the practical performance of the continuous mill, and report as to the advisability of purchasing a mill and furnace. His report, dated Manchester, England, July 15, 1867, was favorable to the installation of a Bedson mill.

* * *

In the meantime, while William E. Rice was rapidly becoming a

(*Please turn to page* 814)

Vaughn Machinery Celebrates Century of Progress

Well-Known Cold Drawing Machinery Manufacturer Achieves World Wide Fame

On April 18th of this year, a century's lifespan was celebrated by **The Vaughn Machinery Company,** of Cuyahoga Falls, Ohio, producer of cold drawing and related auxiliary machinery. And for 99 years of that century, four generations of the Vaughn family have contributed a large impetus to the growth that carried the firm to the enviable position it occupies today —the only producer whose entire facilities are devoted exclusively to the development and manufacture of cold drawing machinery for both ferrous and non-ferrous materials.

★ ★ ★

In Cuyahoga Falls, Ohio, a partnership was established a century ago by **Grant Turner, George Parks** and **Henry Wetmore** under the name of **Turner, Parks and Company,** as a jobbing machine shop for repairing machinery used by other concerns in the area. One year later, **James A. Vaughn** came from Pennsylvania to become a partner in charge of manufacturing operations and design of new equipment.

★ ★ ★

An iron foundry was constructed at the plant in 1866, which remained in continuous operation until 1928. In 1867, the second steam sewer-pipe press in the nation, and the first built west of the Alleghenies, was designed by J. A. Vaughn for installation in a plant on the Ohio River.

★ ★ ★

Special presses, also designed by Mr. Vaughn, were built by the company for use in the manufacture of silica brick, Bessemer converter tuyeres, runner brick for blast furnaces, nozzles for steel ladles, and for the grinding and preparation of clay, to place the company in an important position in the early development of the clay industry. The company continued to design and build clay machinery until 1906, and some of this equipment is still in use—a tribute to its built-in quality.

Leland A. Vaughn
Chairman of the Board

It is one thing to have achieved a ripe old age; it is quite another to be able to look back over the years and note with satisfaction the steady evolution that has brought a company from a modest standing start to a full-blown success on an international basis. The Vaughn saga that is recounted here describes that evolution.

★ ★ ★

In 1871, however, the company's future was forecast when Mr. Vaughn designed and built his first wire-drawing frame for a small nearby plant. A year later, a considerable amount of the firm's equipment was in operation in the old **Cleveland Rolling Mills,** later a portion of the **American Steel and Wire Company,** now a division of United States Steel. By 1881, Vaughn wire drawing equipment was in use by every wire mill in the country, with but a single exception.

★ ★ ★

The partnership became **Turner, Vaughn and Taylor Company** in 1875 with the purchase by **W. A. Taylor** and **J. A. Vaughn** of the entire holdings of Messrs. Wetmore and Park upon their retirement. In that same year, **Calvin W. Vaughn** became an apprentice with the company, then assistant to his father, in charge of operations and product sales, in the early 1880's.

★ ★ ★

By 1881, the firm was equipped

The Vaughn plant as shown on an 1870 letterhead.

★ ★ ★ ★ ★ ★ ★ ★ ★

with the last word in machinery for working wood and iron, operated by water power, for a total of 75 horsepower. The firm was then engaged, in addition to the manufacture of wire drawing equipment, in designing and building improved steam engines, grain-cleaning machinery, mill-gears, and clay-grinding machinery. Steam, hydraulic and screw presses for forming sewer-pipe, machinery for paper and flour mills, etc., were their products, as well. The company also had facilities for sawing lumber to order and for grinding flour, feed, etc., as required.

★ ★ ★

With the sale of stock in 1889, the partnership became a corporation and, in 1895, **C. W. Vaughn** became the sole owner by purchase of all outstanding shares of stock.

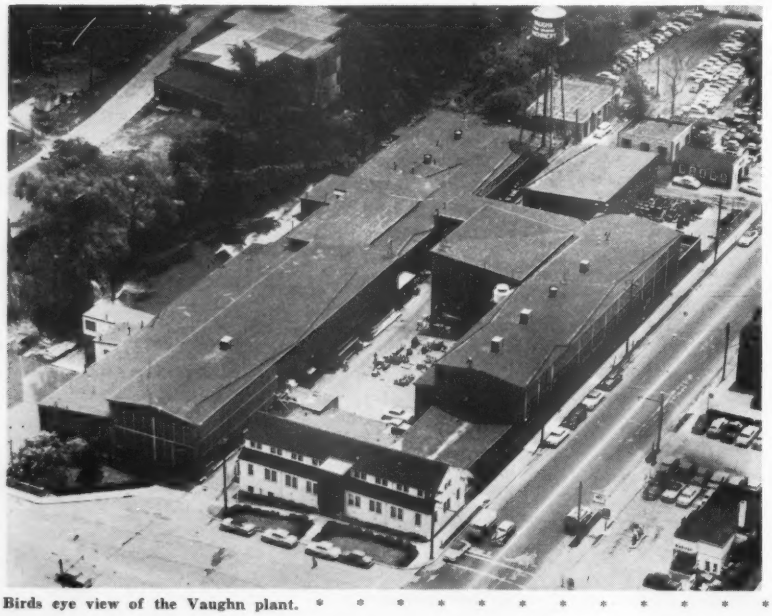
★ ★ ★

Leland Alexander Vaughn, now Chairman of the Board of Directors, entered the company in 1906 and by 1912 he had persuaded his father to develop and manufacture large preparation machinery, such as mixing and warming mills, washers and calenders, for the rubber industry, which was growing fast. Between 1912 and 1920, the demand for this rubber machinery was heavy, necessitating major expansions of the firm's plant facilities. Many rubber firms, however, folded up in 1920, throwing their machinery on the market and knocking the bottom out from under prices in this field. It was in 1920 also that the firm's name was changed to **The Vaughn Machinery Company,** its present title.

Looking down a battery of modern Vaughn machines in a wire mill. * * * * *

★ ★ ★

During this difficult period, the company designed improvements into its line of wire-drawing machinery, which had been unchanged since the early days of wire-making. In 1923, the revolutionary "Motobloc," an individually driven, single spindle wire-drawing unit, conceived in its entirety by Vaughn designers, and powered by an adjustable-speed D.C. motor, was introduced. **Western Electric Company** granted the firm a license in 1926 for the manufacture and sale of highspeed continuous drawing machines for copper wire, helping to establish the company more firmly in the non-ferrous industry. With the introduction of tungsten carbide dies and a practical method of welding one end of a bundle of wire to another, the way was cleared for combining the construction principles embodied in the "Motobloc" in continuously-operating, controlled-speed machines, which were introduced in the early 1930's as the "Motoblox." The "Motoblox" also is exclusively Vaughn designed and built. Drawbenches were added to the line a few years later, and in 1946 the "Ringblox" entered the scene for the high speed drawing of intermediate and fine wire sizes.


Birds eye view of the Vaughn plant. * * * * * * * * * * * *

★ ★ ★

The continual improvement effected by Vaughn's designs in cold-drawing equipment created an ever-increasing demand for their products in that field. This demand resulted in a greater degree of specialization in the production of such equipment over the years since 1871, when **J. A. Vaughn** de-

(*Please turn to page* 820)

Government Wire Production Information

Simplified Practice Recommendations Available

Printed copies of Simplified Practice Recommendation R259-56, Hexagon-Head Cap Screws (Case Quantity and Gross Weight), are now available, from the Commodity Standards Division, Office of Technical Services, U. S. Department of Commerce.

★ ★ ★

The recommendation, proposed by the United States Cap Screw Service Bureau, consists of a schedule of case quantities and approximate gross weights for hexagon head cap screws ranging in size from 3/8 to 6 inches in length, and from 1/4 to 1 inch in diameter.

★ ★ ★

Printed copies of Simplified Practice Recommendation R259-56, Hexagon-Head Cap Screws (Case Quantity and Gross Weight), may be obtained from the Superintendent of Documents, Government Printing Office, Washington 25, D.C., for 5 cents a copy. A discount of 25 percent will be allowed on orders of 100 or more copies.

Government Purchases

Quantities bought through March 31, 1956 under the Government's purchase programs for domestic tungsten, manganese, chrome, mica and asbestos were announced in May by **Franklin G. Floete,** Administrator of General Services.

★ ★ ★

The programs were established to stimulate the search for and the production of strategic and critical materials in the United States. They are separate from the exploration program of the Defense Minerals Exploration Administration, Department of the Interior.

★ ★ ★

Tungsten. Tungsten concentrates under the Government purchase program are accepted at various milling points, mostly in the West. The regulation setting up the tungsten purchase program was published in the Federal Register on May 11, 1951. Purchase of 3,000,000 short ton units (20 pounds each) of contained tungsten has been authorized. Delivered to date: 2,652,328 short ton units.

★ ★ ★

Manganese. Manganese is accepted at two depots—Butte and Philipsburg, Mont. Manganese is also accepted in carload lots at any rail point in the country. Depots at Wenden, Arizona, and Deming, New Mexico, have been closed after reaching their goals. Regulations establishing the Butte, Philipsburg and Deming depots were published July 21, 1951; the Wenden regulation was published July 3, 1952, and the carload regulation on July 9, 1952. The quantities authorized:

MICROMETER PRECISION — MICRO-WELD — TRADE MARK REGISTERED

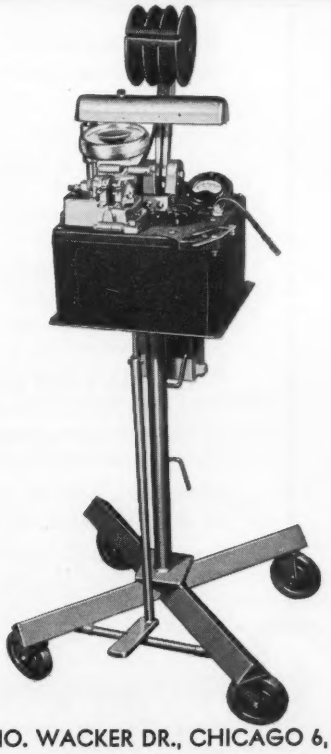
MODEL S.E.M.T. MICRO-WELD BUTT WELDER

This welder was designed and developed expressly for welding all types of fine wire: Aluminum, Copper, Brass, Bronze, Steel and Steel Alloys, ranging in size from .005" to .020" diameter.

Unit design of frame, transformer and power sub-assemblies permit other range of sizes to suit requirements.

Equipped with a temperature indicating annealing and tempering device, voltage regulator and meter to compensate for voltage fluctuation, wire cutters, extra large 5" diameter magnifying glass, fluorescent light and extension cord. Welder can be supplied for bench mounting, or mounted on 4-wheel truck.

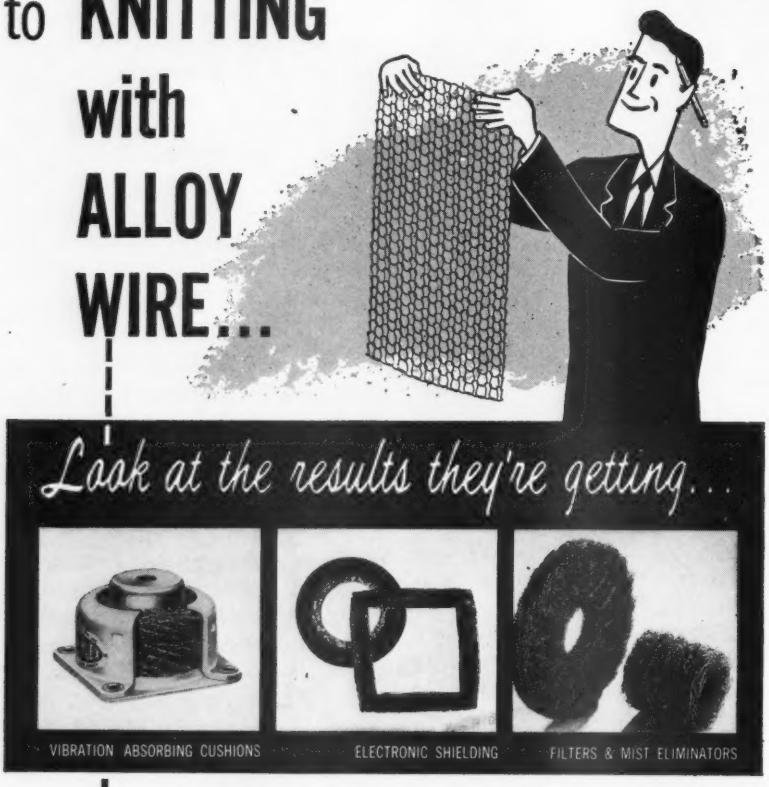
The adaptability of this unit for welding all types of wire, either ferrous or non-ferrous, in sizes from .005" to .020" diameter, makes it ideal for the fine wire manufacturer.



MICRO PRODUCTS CO.,

20 NO. WACKER DR., CHICAGO 6, ILL.
Telephone: STATE 2-7468

Engineers have taken to KNITTING with ALLOY WIRE...



If you haven't started to investigate the design potential for knitted stainless steel and nickel alloy wire, now is the time to do it. Here are some interesting applications to whet your interest and imagination:

1. **VIBRATION & SHOCK ABSORBING CUSHIONS**—used to protect intricate, expensive electronic equipment in aircraft. Alloy wire is unaffected by high temperatures, low temperatures, moisture and other elements.
2. **ELECTRONIC SHIELDING**—knitted alloy wire gaskets eliminate radio interference in electronic equipment. Nickel alloy wire has good conductivity, corrosion resistance and resiliency.
3. **FILTERS & MIST ELIMINATORS**—knitted wire pads remove entrained liquids from gas streams with exceptionally low pressure drop. Shaped cartridges widely used for oil and other liquid filters.

Many other industrial applications take advantage of the outstanding properties of knitted alloy wire. Learn more about these interesting products . . . send today for Application Bulletin A-1.

ALLOY HKP

ALLOY METAL WIRE DIVISION

H. K. PORTER COMPANY, INC.
Prospect Park, Pennsylvania

6,000,000 long ton units (22.4 pounds each) of contained manganese for Butte and Philipsburg together; 6,000,000 long ton units for Deming; and 19,000,000 long ton units for the carload program. Delivered to date: Butte and Philipsburg, 2,184,950 units; carload program 6,174,790 units.

★ ★ ★

Under the authority granted by the Office of Defense Mobilization, purchases of manganese at the depots is now being made on the basis of recoverable, rather than contained units, and reports of receipts are made on that basis.

★ ★ ★

Chrome. Chrome ores and concentrates are accepted at a depot at Grants Pass, Oregon. The program was published August 28, 1951. Purchase of 200,000 long tons of ores and concentrates has been authorized. Delivered to date: 105,652 long tons.

★ ★ ★

Mica. Mica is accepted at three depots—Spruce Pine, North Carolina; Custer, South Dakota, and Franklin, New Hampshire. It is accepted in three forms—block, film and hand-cobbed. The program was published March 15, 1952. Purchase of 25,000 short tons of hand-cobbed mica or the equivalent has been authorized. (For purposes of the program, 90 pounds of block or film mica are considered as the equivalent of one ton of hand-cobbed mica.) Delivered to date: 7,965 tons of all types at all depots.

★ ★ ★

Asbestos. Nonferrous crysotile asbestos in three grades, Crude Nos. 1, 2 and 3, is accepted at a depot at Globe, Arizona. The program was published December 23, 1952. Purchase of 1,500 short tons of Crude No. 1 and/or No. 2 has been authorized. Crude No. 3, which is accepted on a tie-in basis with the other two grades, is not figured into the quantity authorized. Delivered to date: Crude No. 1 and No. 2, 1,425 short tons; Crude No. 3, 741 short tons. Total, in terms of program, 1,425 tons Crude Nos. 1 and 2.

Award Winner for the Best Papers Presented in 1955

The Medal Award Committee of The Wire Association, of which **David M. Schmid,** President of the **Techalloy Company,** is Chairman, has announced the following award winners for papers delivered in 1955 and published in **Wire and Wire Products.**

★ ★ ★

The Medal Award, presented in recognition of the most meritorious contribution to the advancement of the wire industry, goes this year to **Allan B. Dove,** Research Supervisor, **Steel Company of Canada, Ltd.,** for his paper "The Influence of Nail Design and Manufacturing Practice on Joint Strength." The paper was presented at the 1955 Regional Meeting of the Association in New York City.

★ ★ ★

Certificates of Honorable Mention for outstanding papers are to be awarded, for the best Ferrous Division paper, to **Dr. Fritz Schwier,** Chief Engineer, Wire Department, **Felten and Guilleaume Carlswerk,** for his paper: Stress Corrosion and Relaxation of High Carbon Steel Wire for Prestressed Concrete," and for the best Non-Ferrous Division paper, to **Robert O. Abbott, Jr.,** Assistant General Foreman, **Bristol Brass Corporation,** for his paper "Some Bending Characteristics of Cartridge Brass, 70% and Yellow Brass, 65% Wire." **Lewis E. Thelin,** Assistant Chief Metallurgist of the Company was co-author with Mr. Abbott. These papers were delivered at the last Annual Convention and the New York Regional Meeting of the Association, respectively.

★ ★ ★

Selections of award winners are made from among members of **The Wire Association** who have contributed papers without compensation. The members of the Medal Award Committee study all eligible papers, using The Oxford System, and awards are made on the basis of majority opinion.

★ ★ ★

Presentations of the awards, which have been approved by the Board of Directors, will be made

...and here's why!

Now you can enjoy lower freight charges and greater protection against damage with the new, lighter weight NYECO steel reels. They cost so little more, last 12 times longer than wooden reels, require minimum maintenance. Rugged weatherproof, splinter-proof, warp-proof protection protects costly cable against damage due to dropping, bouncing, rough handling.

Think it over and you'll agree that it doesn't pay to risk an investment of thousands . . . and your reputation . . . on inferior reels.

* These leading mills are just a few of the many that prefer **NYECO** Steel Reels: **OKONITE, ROEBLING, WESTERN ELECTRIC, GENERAL CABLE, ANACONDA, PHELPS DODGE**

- *ANY QUANTITY*
- *ANY SIZE*
- *ANY LOAD*
- *FLANGE DIAMETER From 36" UP*

Write • Phone • Wire

NYECO

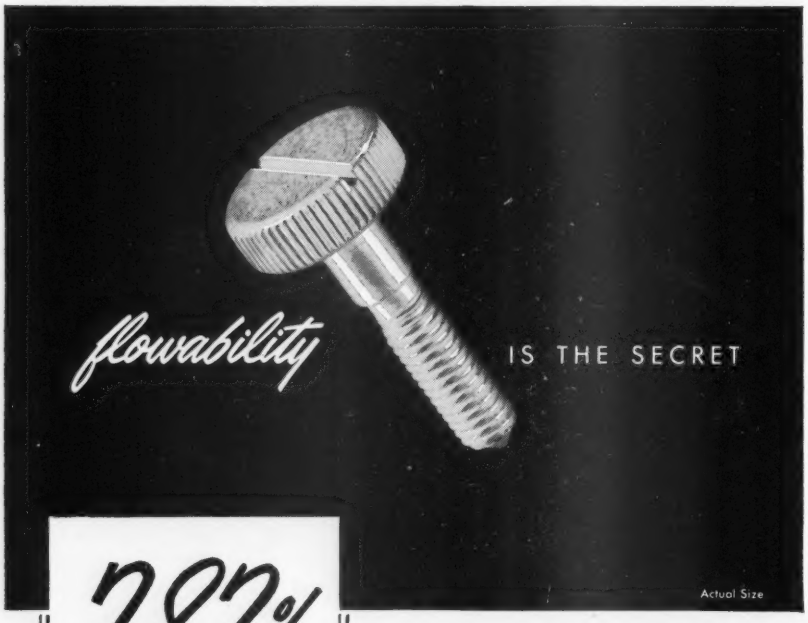
Specialists to the Wire Industries for Over 45 Years

NEW YORK ENGINEERING COMPANY

75 West Street, New York 6, N. Y.

TELEPHONE: WHitehall 4-5380 **CABLE:** NYECO, N. Y. **PLANTS:** YONKERS, N. Y.

KEYSTONE XL COLD HEADING WIRE



282% MATERIAL SAVED...

USING KEYSTONE XL COLD HEADING WIRE

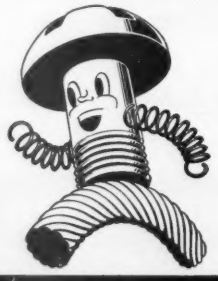
This circuit breaker part was machined at one time. But, cold-heading experts analyzed its design and decided that it could be successfully formed from Keystone "XL" Cold Heading Wire. The result—a material waste reduction from 75% to 7%—and a saving of 282% in steel, plus faster, lower cost production and a finished product that is stronger and free from defects.

Keystone "XL" Cold Heading Wire is not just ordinary cold heading wire. It is wire made to your specific order to exactly solve your difficult cold heading problems. Special drawing, annealing and coating "secrets" produce a wire of exceptional *flowability*. Originally developed for recessed head screws, Keystone "XL" Wire is now widely used to solve many of the toughest cold heading problems at great savings in time and money.

SEND FOR FREE "COLD HEADING" BOOKLET

Get your copy of a new, valuable reference book containing many technical and informative facts about the modern cold heading process. Remember, too, that Keystone specializes in all types of wire for all types of industrial needs. Write us about *your* need!

KEYSTONE STEEL & WIRE COMPANY, PEORIA 7, ILLINOIS



KEYSTONE WIRE *for Industry*

at the Annual Convention of the Association in Pittsburgh next October.

Specifications and Tests for Electrodeposited Metallic Coatings

This compilation of 17 specifications, methods of test, and recommended practices embodies the work of ASTM Committee B-8 on Electrodeposited Metallic Coatings. These ASTM Standards in the field of electrodeposition of metals have either been developed jointly with the American Electroplaters Society, or have had subsequent endorsement by this group.

★ ★ ★

The last issue of the B-8 compilation was October, 1953, and since that time all but 5 of the 17 standards have been revised. Many of the revisions have been based on extensive research projects within the committee, including long-time atmospheric exposure tests of copper-nickel-chromium plated steels.

★ ★ ★

The book contains specifications for zinc, cadmium, nickel-chromium, and lead on steel; nickel-chromium on copper; nickel-chromium on zinc; and chromate finishes on zinc coatings. In addition there are recommended practices for preparation of low-carbon steel, high-carbon steel, zinc-base die castings, and copper-base alloys for electroplating; chromium plating on steels; and preparation of and electroplating on stainless steel and aluminum alloys. Methods of test include test for local thickness and two spray tests—the salt spray (B 117) and the acetic acid-salt spray (B 287).

★ ★ ★

Copies of this 104 page compilation are available from ASTM Headquarters, 1916 Race Street, Philadelphia 3, Pa., at $1.85.

New Yarn Announced

Manufacture of glass-Dacron yarn, an abrasive-resistant insulation which adheres readily to copper, is announced by **L. O. F. Glass Fibers Company,** 1080 Madison Ave., Toledo 1, Ohio.

Designed primarily for use in magnet wire, the glass-Dacron yarn is also used for aircraft electrical cable construction and for sleeving and tubing. It is supplied wound on serving or braider packages.

★ ★ ★

S. W. Schulmeyer, Manager of Electrical Sales, says the combination yarn offers many advantages to manufacturers. In addition to its long life and abrasion-resistant qualities, it has the advantage of being able to withstand considerable abuse encountered in processes of manufacturing motors, generators and transformers.

New Non-Destructive Hipot Tester

A new improved line of Sensitive HiPot Testers which automatically deenergize high voltage when leakage current in samples reach 5 microamps has been announced by **Peschel Electronics Inc.,** 17 Garden Street, New Rochelle, N. Y.

★ ★ ★

Models are available from 2 KV up to 120 KV and special units can be custom built. The smaller units are adjustable up to 1000 microamps and larger units up to 5000 microamps.

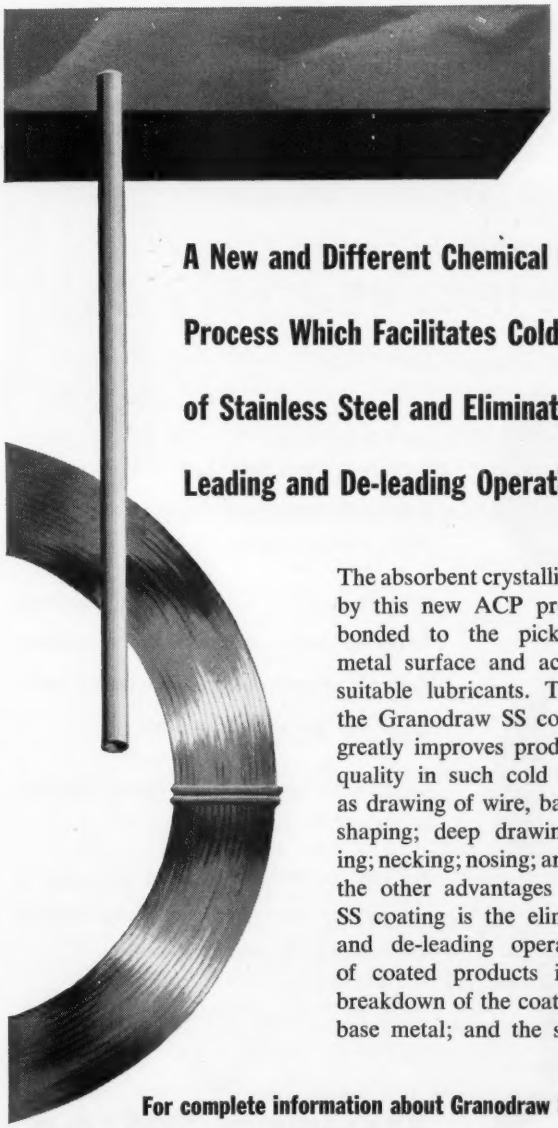
★ ★ ★

The new Series "H" tester avoids the brute force method of burning up fine equipment and components when testing for leakage. HiPot testing allows convenient and accurate dielectric testing of equipment, components and materials. With the new Series "H" tester, the high sensitivity shows up leakage currents in insulation which appear to be perfect on less sensitive instruments.

★ ★ ★

Standard features include both AC and DC outputs and continuously adjustable output voltage. Accurate hand calibrated dual scale metering which is directly across the HV output can be recalibrated at any time by a simple screw driver adjustment. A selfholding primary contactor prevents the accidental reapplication of high voltage after a line failure. The unit

ANNOUNCING GRANODRAW SS®



A New and Different Chemical Coating Process Which Facilitates Cold Forming of Stainless Steel and Eliminates Leading and De-leading Operations

The absorbent crystalline coating produced by this new ACP process is chemically bonded to the pickled and activated metal surface and acts as a carrier for suitable lubricants. The combination of the Granodraw SS coating and lubricant greatly improves production and product quality in such cold forming operations as drawing of wire, bars and tubing; cold shaping; deep drawing; stamping; ironing; necking; nosing; and upsetting. Among the other advantages of the Granodraw SS coating is the elimination of leading and de-leading operations; the storing of coated products indefinitely without breakdown of the coating or pitting of the base metal; and the short coating cycle.

For complete information about Granodraw SS, write ACP today

AMERICAN CHEMICAL PAINT COMPANY, Ambler 30, Pa.

DETROIT, MICH. • ST. JOSEPH, MO. • NILES, CALIF. • WINDSOR, ONT.

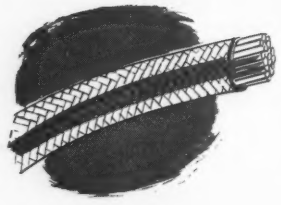
CHEMICALS ACP PROCESSES

from **UNITED...**

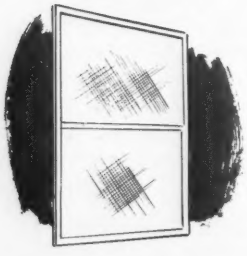
ALUMINUM

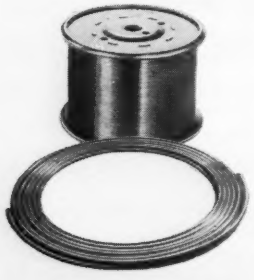
BRASS

COPPER WIRE



as you like it . . . when you need it!





United's quality control builds into aluminum, brass and copper wire the features you like. Features such as these:

Solid drawn wire • Close tolerances • Accurate to size and shape • Uniform temper throughout Available on spools or in coils • Square, half-round and flat shapes available

United's efficient production assures delivery on time, all the time.

For wire as you like it, when you need it, specify and buy United, the quality name in aluminum, brass and copper wire.

Permanently United

UNITED WIRE

AND SUPPLY CORP.

PROVIDENCE 7, R. I. • OFFICES IN PRINCIPAL CITIES

LOOK TO UNITED FOR THE BEST IN ALUMINUM, COPPER AND BRASS TUBE AND WIRE

is complete with full safety controls and dead-front panel controls; Safety resistor in DC output lead.

New Bulletin Describes Special Type of Stainless Wire

A new specification bulletin describing the advantages of a special "Blue Label" Type 302 stainless wire for springs and similar parts has been issued by the **Webb Wire Division** of **The Carpenter Steel Company,** New Brunswick, New Jersey.

★ ★ ★

In addition to outlining corrosion resistance and other features of the wire, the bulletin charts the range of tensile strengths for various sizes, and shows in table form the minimum tensile strengths of representative sizes. A graph shows resistance to relaxation at elevated temperatures. Specifications are given for shapes and size ranges, along with a complete description of properties and characteristics.

Sells Screening Cut to Size

The Alabama Wire Company Florence, Ala., has announced increased capacity in their cut-to-size department. This comparatively new service to manufacturers provides screen wire cut to size, exact width and length, packed flat in steel bound boxes, 200 pieces per size per box. To manufacturers of doors and standard sizes of screens or combination window screens, this is a real boon as it furnishes material ready for rolling into the screen, and eliminates the waste of even a single strand of aluminum screen wire. Close tolerances are maintained by cutting machines which cut the material to the width as well as to the length, either in even inches or in fractional inch widths.

Standards on Metallic Electrical Conductors

Since its organization in 1909, ASTM Committee B-1, which includes in its personnel leading technical authorities concerned both with the use and manufacture of electrical conductors, has endeavored to make available ac-

ceptable testing procedures and sampling methods and specifications covering the quality and other essential features of metallic conductors. Within the past few years there has been intensified activity because of the new materials and composites coming into the picture. The standards in this special compilation, issued so that those interested may have all the material in compact and convenient form, represent the careful and considered technical opinions of leading men in the industry representing both the consumer and producer.

★ ★ ★

Copies of these standards, published in December, 1955, may be ordered from the **American Society for Testing Materials,** 1916 Race St., Philadelphia 3, Pa. Prices are $3.50 each, except to ASTM members, who may procure copies at $2.65 each.

Super-Strong Strand Supports Hangar Roof

The word's largest universal testing machine at Lehigh University was used to test **Bethlehem Steel Company** specimens of galvanized bridge strand and steel anchor rods that will support a hangar roof at Philadelphia Airport in place of the customary ceiling beams or trusses.

★ ★ ★

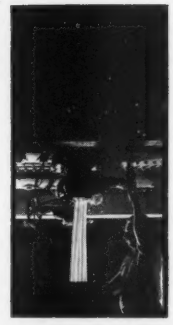
Twenty sections of the 2 9/16 in. strand, totaling 3,060 feet in length, will be used to support the lean-to style roof. The strand, in turn, will be supported in pairs by ten 28-foot steel tower posts set near the outboard edge of the roof. The strand will ride on a saddle set on the top of each post.

★ ★ ★

The strand was made at Bethlehem's Williamsport plant. Steel sleeve sockets, to fasten the strand to 40 anchor rods, had to be specially made for this use.

★ ★ ★

The threaded 4 in. diameter rods, ranging in length from 11 to 32 feet, are alloy steel—quenched, tempered and extensometer tested. They are designed to withstand a



NELCO TRADEMARK

finishes for wire and cable constructions

Formulated by specialists . . . backed by over 30 years of experience in working with wire manufacturers. Nine standard finishes are listed below. Many more are available. Consider how you can use them or how we can help you to select the exact finish for your particular problem.

NL 7147—NELCO Cable Coating
General radio hook-up and push-back wire constructions

NL 7147-S NELCO Clear Cable Coating
Similar to NL 7147 but with fungicidal agent

NL 8223—NELCO Clear High Heat Resistant Cable Coating
Meets requirements of automatic primary wire manufacturers

NL 8244—NELCO Nylon Cable Coating
A penetrating bonding coating for nylon braided constructions

NL 9776—NELCO Clear Cellulose Acetate Cable Coating
For switchboard hook-up wire constructions

R 1407—NELCO Nylon Cable Coating
For wire constructions meeting MIL-W-5086

R 2055—NELCO Anti-Fray Saturant
Prevents fraying of glass-braided wire constructions

R 4004—NELCO Flame Retardant Saturant
Good flame resistance, no color change

R 4026—NELCO High Temperature Resistant Cable Coating
Fluorinated coating for wire constructions meeting MIL-W-8777

Write for our Data Sheets giving complete information on these finishes.

Chemical Products CP CORPORATION

KING PHILIP ROAD • EAST PROVIDENCE 14, RHODE ISLAND

Titan Brass Wire

is **Hot-Extruded**
Annealed
Drawn

for highest strength and quality

Titan Brass Wire has precisely uniform gauge . . . color . . . texture . . . temper . . . is free from physical defects. For making highest-quality rivets, bolts, nuts, eyelets, fasteners, screws, studs, binding posts, terminals, washers, pins and nails . . . order Titan Brass Wire. Compositions and tempers are supplied to meet every requirement. Let us help you choose the proper wire composition and temper for **Heading & Extruding**
Heading & Drilling or
Forming & Bending

Call your nearest Titan Office

Offices and Agencies in these cities:

Atlanta	Denver	New Orleans	Seattle
Camden	Detroit	New York	St. Louis
Chicago	Houston	Old Lyme, Conn.	St. Paul
Cincinnati	Indianapolis	Salt Lake City	Toledo
Cleveland	Los Angeles	San Francisco	Washington

Mill Depots: Bellefonte, Pa., and Indianapolis

Write today for free folder "Titan Brass Wire" listing grain sizes, weights, tolerances and other data. Address: Customer Service Division, Titan Metal Mfg. Co., Bellefonte, Pa.

Titan®

METAL MANUFACTURING COMPANY

General Offices & Plants: Bellefonte, Pa.

Quality Alloys by Brass Specialists

980,000-pound load. That the rods are comfortably capable of surpassing this stress was indicated when one of the lot was pulled apart at 1,552,000 pounds in a tensile test.

★ ★ ★

An assembly consisting of a length of strand, socket and anchor rod was tested to a required 784,000 pounds of ultimate strength. In the hangar structure, one end of the rods, together with washer and nut of the same material, will be embedded in concrete to anchor the strand.

To Plate Stainless Wire Electrolytically

An electrolytic machine for copper plating stainless steel wire has been installed at **Republic Steel Corporation's Union Drawn Steel Division** plant in Massillon, Ohio, **D. D. Buchanan,** manager of operations, has announced.

★ ★ ★

The first equipment of its type installed in the cold finishing industry, it copper plates stainless wire in diameters from 3/16″ to 5/8″. The copper plating normally varies from .0001″ to .0002″ thick. However, the copper thickness can be varied considerably to meet customer requirements.

★ ★ ★

The single strand machine gives exceptional uniformity of copper plating and eliminates the possibility of flaking. In copper plating methods used heretofore in the industry a lack of uniformity and flaking have been major problems.

★ ★ ★

Copper coated stainless steel wire is used primarily for the production of bolts, nuts, screws and other fasteners. End products are used in the aircraft, chemical, automotive, oil refinery, atomic energy and other industries where corrosion-resistant fasteners that stand up under high temperature, critical applications are required.

TO SELL—ADVERTISE IN
WIRE AND WIRE PRODUCTS
It pays—send for rates
453 Main St., Stamford, Conn.

New Type Tapes for Printed Labels

York Tape Printers, Inc. have a versatile new process that permits the printing of tapes hitherto not printable—including (3M's) No. 880 reinforced filament, No. 898 reinforced glass filament, No. 710 transparent, No. 750 colored acetate fibre, No. 800 acetate film, No. 325 paper filament, No. 852 polyester film, No. 810 permanent mending tape, No. 250 carton-sealing tape and No. 270 parchment paper tape. The tapes are available in one and two color printing, with choice of copy.

★ ★ ★

Other tape constructions come on light or heavy paper, cellophane, laminated cellophane, waterproofed cloth, electrical tapes and so forth. Most tapes can be supplied in perforated form for quick detachment of labels without a dispenser. Printed tape widths range from ¼" to 4" in desired lengths.

★ ★ ★

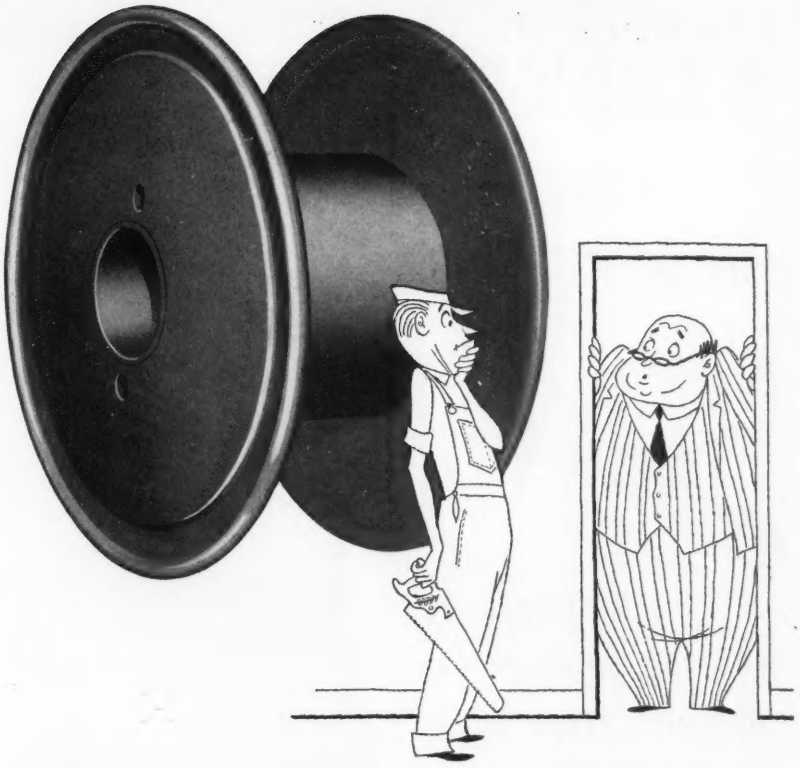
Applications for which York tape labels are being used include: package wrapping and identification, wrapping special combination deals, point-of-sale advertising, stock inventorying, lot identification, service instructions, wiring diagram labels, wire and cable identification, fuel line marking, cylinder marking, attaching Underwriters' seals and other uses.

★ ★ ★

For information, write York Tape Printers, Inc., 1953 Stanton St., York, Pa.

Bulletin on Knitted Wire Products

A new 8 page bulletin, A-1, Entitled "Knitted Alloy Wire Products," is now available from **Alloy Metal Wire Division, H. K. Porter Co.** The bulletin presents detailed descriptions of the interesting fields of application for knitted stainless steel and nickel alloy wire. Included are such widely used industrial products as filters, liquid entrainment separators, shock absorption cushions and electronic weather-stripping. The properties of knitted wire and the available materials of construction are dis-



SPECIAL REQUIREMENTS
need special attention . . .

When your specifications for steel reels, spools, and bobbins call for *special* attention to the details of size, shape, trueness, and balance . . . call on Apco Mossberg. Backed by over 50 years of specialized service to wire and wire rope manufacturers, our engineering and service departments will submit recommendations, without obligation, that are custom-tailored to fit your needs. Write today, or call collect . . . Attleboro 1-0340.

Ask For Our Booklet Containing Information On:

Flat Head Spools
Curled Flange Spools
Stranding Reels
Take Off Reels
High Speed Wire Drawing Reels
Vulcanizing and Insulating Reels
Pressed Steel Bobbins for Wire Weaving

Pacific Coast Representative:
Gordon Proffitt
Room 501-503
24 California Street
San Francisco 11, Calif.

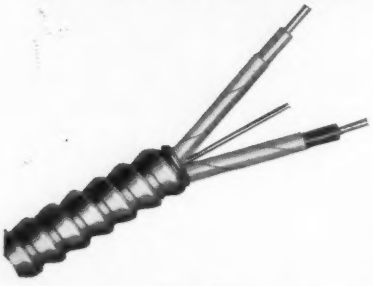
Canadian Representative:
Hugh P. Williams & Co.
47 Colburne Street, West
Toronto, Ontario, Canada

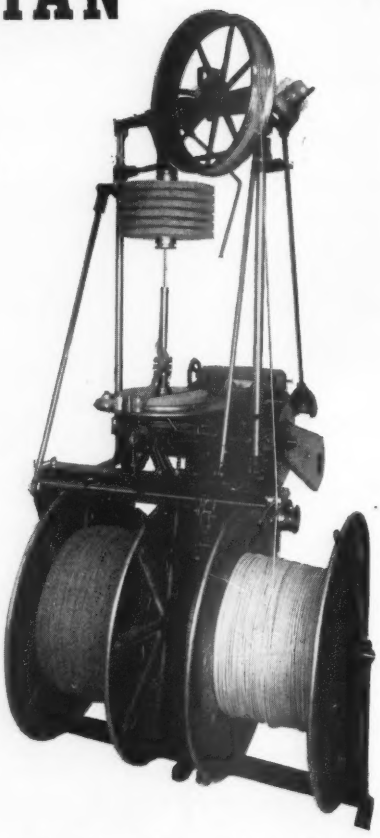
(The original Frank Mossberg Co.)

APCO MOSSBERG COMPANY
ATTLEBORO, MASS.

WARDWELLIAN®

Paper Server for Armored Cable





An improved serving machine for applying crepe paper on conductors used in the manufacture of armored cable.

- Equipped with adjustable traverse, supply and windup stands, windup driving mechanism, electric stop-motion and capstan release mechanism.
- Equipped for adjusting lay of paper strip.
- Rate of production: 5,000 ft. per hour possible, depending upon width of material and lay.
- Serving head speed 560 R.P.M.
- Driving pulley 8" diameter; 1¾" belt. Speed 260 R.P.M.
- Capstan 18" diameter, 3" face.
- Opening through serving head ⅝" diameter.
- Supply packages 16" diameter, 3" diameter core.
- Supply tube will hold 8 reserve packages of 1" wide paper.
- Maximum power requirement ¾ H.P.
- Motor drive furnished upon request at additional cost.
- Counter for measuring production in feet.
- Stands will accommodate reels 30 inches in diameter, with overall width up to 16 inches.
- Reels not included with machine.

Note: Serving head normally runs clockwise, but can be made to run counter-clockwise if requested.

WARDWELL BRAIDING MACHINE CO.

Central Falls Rhode Island, U.S.A.

Representatives for Europe, British Colonies and Dependencies

JAMES MACKIE & SONS, LTD., BELFAST, IRELAND

cussed.

★ ★ ★

For a copy of Bulletin A-1 write, Alloy Metal Wire Div., H. K. Porter Co., Prospect Park, Pa.

Italy Passes Law to Attract Foreign Capital

A new law dated February 7, 1956, enacted by the Italian Government provides that capital for new enterprises or the enlargement of existing enterprises will be entitled to transfer abroad, without any limit whatsoever, dividends and profits actually collected, as well as such capital as may derive from subsequent disinvestment, if any.

★ ★ ★

Funds for investment from abroad must be in currency acceptable by the Italian Exchange Control Office and changed through its channels for the purpose of investing the countervalue in Lire in Italian business projects.

★ ★ ★

The law was designed by the late Finance and Budget Minister **Ezio Vanoni** to attract foreign capital. Previously, earnings over 6% could not be taken out of the country and capital could only be repatriated after a lapse of two years in the amount of the original investment.

Canada Wire & Cable Has Large Order Backlog

Canada Wire & Cable Co., subsidiary of Noranda Mines Ltd., has an encouragingly large backlog of orders and this year promises to be a good one, President **J. R. Bradfield** said at the annual meeting.

★ ★ ★

Gradual but steady growth for the company is indicated, he said, and the securing of capital is being studied.

★ ★ ★

Mr. Bradfield has announced the appointment of **Leonard G. Lumbers** to the board of directors. Joining the company in 1929, the new board member became general sales manager in 1948 and a vice president in 1951.

Outstanding Personalities of the Wire Industry

Beryllium Corporation Elects New President

Management changes brought about by rapid developments in the scientific, nuclear and technological fields were announced in May by The Beryllium Corp., producer of beryllium metal and alloys.

★ ★ ★

At his own request, **Matthew J. Donachie's** resignation as president was accepted by the board of directors so that he could be relieved of administrative duties and devote his entire efforts as director of research and development.

★ ★ ★

The board elected **Walter R. Lowry,** who became vice president and treasurer last March, to Beryllium's presidency.

★ ★ ★

Richard M. Quimby, formerly secretary and assistant treasurer, becomes secretary and treasurer, and **Robert M. Whitaker,** comptroller, was given the additional duties of assistant treasurer and assistant secretary.

Walter R. Lowry

Lawrence F. Boland is vice president of Beryllium in charge of sales and **William D. Gamon** is vice president operations.

Alloy Metal Wire Appoints Cleveland District Manager

W. J. Reed has been appointed District Manager of the Cleveland Office of **Alloy Metal Wire Div., H. K. Porter Co., Inc.,** it was announced by **E. H. Mann,** vice president and General Manager. Mr. Reed will fill the vacancy left by **Peter Stefan** who was recently promoted to general sales manager. The office is located in Berea.

★ ★ ★

He joined Alloy Metal Wire Division in 1939 and worked in the Fine Wire drawing department until 1943, when he entered the service. After three years in the army air force, he returned to Alloy in 1946 and spent an additional six years

Glader—Years of Proven Performance
GLADER NAIL MACHINES
55 YEARS of experience meeting the exacting demands of nail making.
The machine with a record of steady dependable service.
Wm. GLADER MACHINE WORKS
210 N. RACINE AVENUE
CHICAGO 7, ILLINOIS
Export Dept.: 122 East 42nd Street, New York 17, N. Y.

in the plant. In 1946 he was transferred to the sales department. He was made Philadelphia District Manager in 1954 and served in that capacity until his present appointment. He is a graduate of Temple University.

Heli-Coil Elects Officers

The Heli-Coil Corporation, Danbury, Conn., has announced the appointment of **Eduard Baruch** as president. Heli-Coil manufactures wire thread inserts to provide strong, wear-resistant threads in aluminum, magnesium and plastics.

★ ★ ★

Walter Mann was elected executive vice-president and **Harold Nohe** was reappointed secretary and treasurer.

★ ★ ★

Louis R. Ripley, who has been president of Heli-Coil since its formation six years ago, has assumed the duties of chairman of the board of directors, and **John Tucker** was elected assistant secretary and treasurer.

Mr. Baruch was instrumental in forming the Heli-Coil Corporation and has served as a vice-president and director of the company since 1951, and as executive vice-president since last January.

Export Director Named by Porter

A. A. Lodigensky has been named Managing Director-Exports for **H. K. Porter Company, Inc.** His headquarters will be in the firm's New York offices at 300 Park Avenue. Before joining Porter, he was with Reynolds Metals and Joy Manufacturing Co.

★ ★ ★

Porter's thirteen divisions are: Alloy Metal Wire, Connors Steel, Delta-Star Electric, Eseco, Henry Disston, Laclede-Christy Company, Leschen Wire Rope, McLain Fire Brick, Quaker Pioneer Rubber, Quaker Rubber, Riverside Metal, Vulcan Crucible Steel and W-S Fittings.

Continental Steel Elects Officers

At a meeting on May 15th, the Board of Directors of **Continental Steel Corporation** named an executive vice president, two additional vice presidents, and a new assistant secretary. The company also announced the designation of a new comptroller.

★ ★ ★

W. G. Harter, who last December 1 became vice president and treasurer, was named executive vice president and treasurer. Mr. Harter began service with one of Continental's antecedents, Chapman Price Steel Company, at Indianapolis, in 1922 as an engineer. He became credit manager of Continental in 1934, secretary and assistant treasurer in 1940, and a director in 1943.

★ ★ ★

F. R. Davis, who was made director of purchases in 1951, was named vice president in charge of purchases. Mr. Davis began service with one of Continental's antece-

INTERNATIONAL *Fine Wire Co., Inc.*

Precision Wire Drawn to Your Specifications

INTERNATIONAL FINE WIRE CO. INC. — FINE WIRE • STRANDED • CABLED — IN ALL METAL ALLOYS — MIDLAND PARK NEW JERSEY

SILVER PLATED COPPER WIRE

Concentric Stranded Bunched & Single End. 1¼-1½ to 4% Silver Coated on Copper by weight. Amount of Silver accurately controlled for thickness and purity to meet U. S. Government specifications.

Constructions supplied to your special design.

IWPCO — QUALITY SERVICE WIRE PRODUCTS

WE ALSO SUPPLY:

NICKEL • NICKEL PLATED WIRE • RESISTANCE WIRES • MONEL • COPPER AND ALL TYPES OF STAINLESS STEELS—BOTH SINGLE END AND STRANDED FORMS

In Special Tempers, Annealed, Bunched and Stranded, etc.

1 GREENWOOD AVENUE • MIDLAND PARK • NEW JERSEY

Telephone: Gilbert 4-2151

dent companies, at Indianapolis, in 1925 and came to Kokomo in 1934 as an assistant purchasing agent. He was promoted to the position of purchasing agent in 1950.

★ ★ ★

Arthur L. Miller was named vice president in charge of operations. Mr. Miller came to Continental in 1933 as an engineer, was made superintendent of machine shop in 1939, then assistant chief engineer in 1946. He became assistant general superintendent in 1947 and was named general superintendent in April 1954.

★ ★ ★

Other appointments included, **J. H. Hite,** assistant secretary and **M. M. Pfeiffer,** comptroller. Both men have served the company for many years.

Regional and Branch Managers Named by Chase Brass

The promotion of **Paul M. Thomas,** Dallas, Texas, to the position of midwestern regional manager for **Chase Brass & Copper Co.,** a subsidiary of Kennecott Copper Corporation, has been announced by **George B. Moseley,** vice president —sales. Mr. Thomas has been district manager for Chase in Dallas since 1949. He replaces **G. Townsend Underhill,** resigned.

★ ★ ★

To succeed Mr. Thomas, Mr. Moseley has promoted **Alfred M. Johnson,** a salesman for Chase at St. Louis, Mo., to the position of district manager, in Dallas.

Elgin Abrasives Division Names New Sales Engineers

The Abrasives Division of **Elgin National Watch Company** announces the appointment of two sales engineers to handle product sales.

★ ★ ★

William Baudouine, sales manager of the division, said the men will handle Elgin's complete line of diamond compound, carbide and rotary tools, and Elgiloy spring material.

Appointed to the Chicago area and eastern Missouri territory, including St. Louis, is **Arthur Leaver,** an Elgin employee for 10 years, who will work out of Elgin, Ill.

★ ★ ★

John Wiziarde, 859 Leader Building, Cleveland, Ohio, has been assigned to handle the Ohio sales territory. He has been with Elgin for five years.

Metal Processing Chemicals Department Appointments

John M. Davidson has been named Manager of the **Pennsylvania Salt Manufacturing Company's** Metal Processing Department. He succeeds **Joseph J. Duffy** who was

MASON lightweight, non-returnable, lithographed spools for:

INSULATED WIRE
AUTOMOTIVE CABLE
THERMO-COUPLE WIRE
TV LEAD-IN WIRE
SOLDER WIRE

IF you want dependable performance and attractive appearance—at a low, low cost—put Mason Spools at the top of your list!

Over 175 leading manufacturers can attest to the performance of Mason Spools. As for appearance... the rich, colorful perfection of Mason lithography is your best assurance of *instant brand identification.*

Mason Spools are available in 5", 6½", 8½", and 10½" head sizes. All sizes available with 1⅞" (Dia.) barrels. The 10½" head size is available with a 3½" (Dia.) barrel. Barrel lengths from ⅝" to 14".

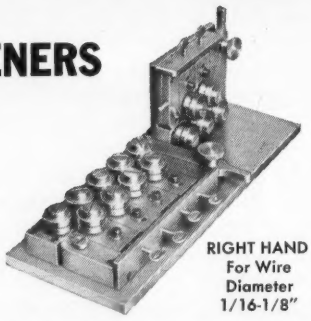
Let us know about your spool requirements *now!* Telephone East Providence 1-2810 or write to the address below.

MASON CAN COMPANY

1949 Dexter Road, E. Providence 14, R. I.

Branch Plant — Greenville, Ohio

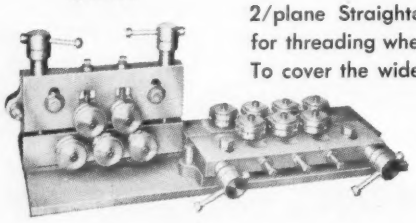
Sjogren 2 PLANE ROLL STRAIGHTENERS



RIGHT HAND
For Wire
Diameter
1/16-1/8"

Sjogren Two Plane Roll Straighteners are fully ball bearing for heavy production duty. They are designed to accommodate all sizes and grades of round or shaped wire whether it be high carbon, low carbon or copper, as well as the many alloys, from .010" to .375". Once set for the job at hand Sjogren 2/plane Straighteners may be opened and closed for threading when making coil changes without effecting the adjustment of the setting. To cover the wide range of wire diameters there are several size groups manufactured with either left or right hand direction. Each is individually produced to exact specifications for the grade, size and type of wire to be processed. Sjogren Two Plane Roll Straighteners do their duty each day, every day in the year.

LEFT HAND
For Wire Diameter
3/16-3/8"



Used by Wire Men Who Want the Best!

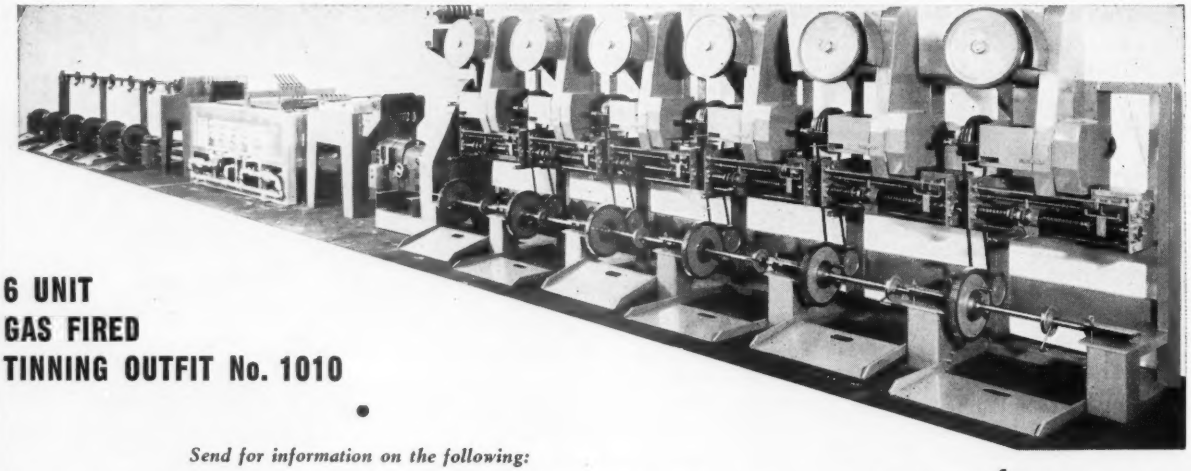
SINCE S&S 1927

WIRE PULLERS • WEDGE GRIPS • JAWS FOR ALL MAKES OF PULLERS AND TESTING MACHINES • CAGE ROLLERS • SWAGING HAMMERS • POINTING DIES • WIRE SPOOLERS

SJOGREN TOOL AND MACHINE CO., INC.

Tools for The Wire Industries

14 SWORD STREET, AUBURN, MASSACHUSETTS



6 UNIT
GAS FIRED
TINNING OUTFIT No. 1010

•

Send for information on the following:

WIRE ANNEALING, TINNING and GALVANIZING OUTFITS

MULTIPLE or SINGLE UNIT WIRE TAKE-UPS

FINE WIRE DRAWING MACHINES

MAGNET WIRE ENAMELING EQUIPMENT, INCLUDING

PRE-ANNEALERS, SYNTHETIC ENAMEL APPLICATORS and CIRCULATING SYSTEMS

COTTON, GLASS-FIBRE and TAPE COVERING MACHINES

EST. 1855 AIMco INC. 1915

"American" INSULATING MACHINERY COMPANY

REG. U.S. PAT. OFF.

FAIRHILL AND HUNTINGDON STREETS

PHILADELPHIA 33 PENNSYLVANIA U.S.A.

recently placed in charge of the company's Executive Development Program.

★ ★ ★

In announcing Mr. Davidson's appointment, General Manager **Albert H. Clem** of the Chemical Specialties Division stated that Mr. Davidson would be responsible for the national distribution of Pennsalt's line of phosphatizing, lubricating and cleaning chemicals for the metal processing and basic steel industries.

★ ★ ★

Also John C. Lum has been named Manager of New Products and **Philip Rech** Manager of Fosproducts for the Department.

New Glass Micro-Fiber Paper for Electrical Manufacturing

The electrical manufacturing industry has been quick to see possibilities open to it through use of a new, 1-mil thick paper made of glass micro-fibers produced by **L. O. F. Glass Fibers Company,** Toledo 1, Ohio.

★ ★ ★

According to **S. W. Schulmeyer,** manager of electrical sales for the fibrous glass producer, the new paper combines mechanical strength with high absorbency. It proves especially useful where compact design requires space conservation.

★ ★ ★

The extremely fine fibers give a large surface area which can be easily impregnated to form a product free of voids. It impregnates readily with silicones, electrical varnishes and resins. Paper made of the new fibers is a uniform thickness of 1-mil, and other thicknesses are available as desired. It is manufactured in roll form, either sized or unsized. It meets all requirements for Class H insulation.

★ ★ ★

Uses for the new paper include slot cells, slot cell liners, slot armor, glass base sheet laminates, tapes, transformer layer insulation, and in mica and glass paper combinations.

Crucible Forms New Division

Crucible Steel Company of America has formed a new division for the fabrication and sale of steel springs, according to an announcement made by **Joel Hunter,** President. Known as the Spring Division, the new organization combines all previously existing Crucible spring fabrication and sales activities including Spring Works, Pittsburgh, and the Company's Railroad and Spring Sales Division. **William Krepps** continues as Sales Manager of the latter division.

★ ★ ★

At the same time Mr. Hunter named **Thomas T. Crowley** General Manager of the new division. Mr. Crowley was formerly Staff Assistant to **W. H. Wiewel,** Senior Vice President at Crucible. In his new position, he is responsible for all phases of the Division's operation including production, sales, personnel, and administration. Division headquarters will be at Spring Works, McCandless Ave., in Pittsburgh. The Division will operate as a separate unit.

Standardize on ACROPAK* Spools!

Only ½ the Weight!

Light Weight
Precision built
Reduced cost
Longer life
Extra strength
Dynamic balance
Greater production
Low cost reconditioning
Less maintenance
Attractive packaging

YET STRONG, TOUGH, RIGID . . *LONGER LIFE*

ACROPAK Spools will help you cut wire packaging costs because they give longer service, require less maintenance and cost less to ship. They're strong. They'll take repeated shippings and still run true on the arbor. They're machined to close tolerances. You can run them at high production speeds with fewer snags, less toe-out and minimum end breakage.

THEY CUT YOUR SPOOLING COSTS

Best proof of ACROPAK superior performance are the millions of these spools now used by the biggest names in the wire industry. We've proved it to them—let us prove it to YOU.

★ We also make a complete line of heavy-duty shop processing STEEL SPOOLS built to the same high standards of accuracy and rigidity as the famous Acropak aluminum spools.

ACROMETAL PRODUCTS INC.
Division U S Bobbin and Shuttle Co., 616 Fifth Street N., Minneapolis 1, Minn.

COPPER - Copper produced by primary smelters in the United States from domestic and foreign primary, and from secondary materials, 1954-55 (monthly averages) and 1956, by months, in short tons

	Domestic	Foreign	Secondary	Total
1954	69,532	9,293	6,979	85,804
1955	83,942	8,268	4,463	96,673
1956:				
January	94,549	9,033	4,250	107,832
February	1/91,116	11,934	1/8,240	1/111,290
March	104,577	12,363	9,141	126,081

1/ Revised figure.

Refined copper produced at primary plants in the United States, 1954-55 (monthly averages) and 1956, by months, in short tons

	From primary material			From scrap		
	Domestic	Foreign	Total	New	Old	Total
1954	70,143	30,850	100,993	8,518	6,477	14,995
1955	83,125	28,747	111,872	6,108	11,105	17,213
1956:						
January	93,252	24,379	117,631	6,360	6,466	12,826
February	1/91,071	30,845	1/121,916	9,902	1/10,698	1/20,600
March	97,040	27,992	125,032	11,105	13,102	24,207

1/ Revised figure.

CAMDEN WIRE CO., INC.

Wire Fabricators

Producers of Quality Fine Wire Copper Conductors

EXTRA FLEXIBLE CONDUCTOR STRANDED OR BRAIDED

MULTIPLE ENDS OF SIZES .008 to .002

BARE · TIN or LEAD COATED · SILVER PLATED

Special Heavy Tinned Conductors for Hook-up Wire

40 MASONIC AVENUE • CAMDEN, NEW YORK

Firth Sterling Appoints Service Engineer in Detroit District

Firth Sterling Inc. has appointed **Colin G. Walcott** Carbide Service Engineer in the Company's Detroit District. Mr. Walcott will cover the Flint, Saginaw, Lansing, and Pontiac territories.

★ ★ ★

For twenty years Mr. Walcott was associated with the Buick Motor Division of General Motors as Supervisor of Research and Development in the Metallurgical Department. While with General Motors he was also instrumental in setting up carbide standards.

★ ★ ★

He is a member of the American Society for Metals and served four years on the Cemented Carbides Committee of the American Society for Testing Materials. A graduate Mechanical Engineer, he majored in Industrial Metallurgy at Michigan State University.

Fansteel Names Vice Presidents

Three new vice presidents of **Fansteel Metallurgical Corporation** were elected by the board of directors, **Dr. Frank H. Driggs,** President, has announced.

★ ★ ★

Dr. Leonard F. Yntema, director of research, is a specialist in metallurgy and inorganic chemistry. Before joining Fansteel in 1943, Dr. Yntema taught at the University of Illinois and headed the chemistry department at St. Louis University.

★ ★ ★

Dr. John D. Kleis, manager of the electrical contact division, is a physicist. He joined Fansteel in 1936 as a research physicist, specializing in electrical contact materials and semi-conductors. He became assistant director and manager of research in 1953 and manager of the electrical contact division in 1955.

★ ★ ★

Stuart B. Miller, comptroller, is a certified public accountant.

To Head Research for Houghton

Dr. Robert K. Smith has been appointed Manager of Research for **E. F. Houghton & Co.,** 3rd and Lehigh Ave., Phila., Pa., manufacturers of industrial oils, packings, metal working products and chemicals.

★ ★ ★

Dr. Smith, 36, was formerly associated with the Houdry Process Corporation, Marcus Hook, Pa., as Chief of the Exploratory Research Section.

★ ★ ★

He is a graduate of Pennsylvania State College with Bachelor and Master degrees in Organic Chemistry, and received the degree of Doctor of Philosophy in Physical-Organic Chemistry from Princeton University.

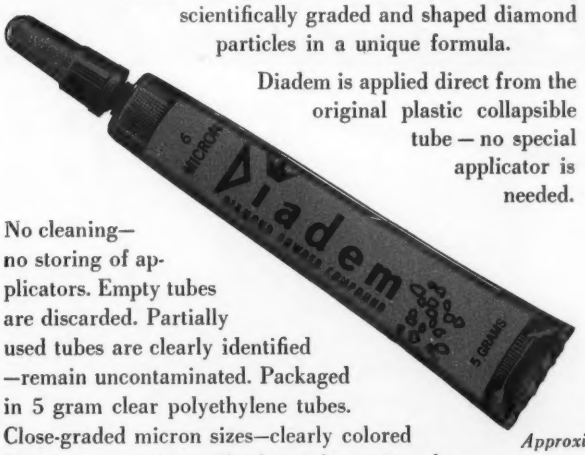
New Booklet on Quality Bolts

Manufacture of aircraft quality bolts, from original wire stock to finished precision product, is described in a new 12-page booklet issued by **Aero Supply Mfg. Co., Inc.,** Corry, Pa. Entitled "Let's Make A Bolt," the presentation starts with an explanation of the quality control measures employed during manufacture, follows through with outlines of what goes into cold heading, bolt trimming, roll threading, heat treating, electro plating, magnaflux inspection and final inspection and with methods of packing and shipping. The booklet is fully illustrated.

Diadem | DIAMOND POWDER COMPOUND

Diadem Compounds are made by incorporating scientifically graded and shaped diamond particles in a unique formula.

Diadem is applied direct from the original plastic collapsible tube — no special applicator is needed.



Approximate size

No cleaning— no storing of applicators. Empty tubes are discarded. Partially used tubes are clearly identified —remain uncontaminated. Packaged in 5 gram clear polyethylene tubes. Close-graded micron sizes—clearly colored for easy recognition. Further information about DIADEM upon request.

WHITTAKER CLARK & DANIELS, INC.

260 West Broadway
New York 13, N. Y.

Appoints New Product Manager In Abrasives Division

Elgin National Watch Company announces the appointment of **Douglas Graham** as product manager of the company's abrasives division.

★ ★ ★

C. R. Myer, general manager of the division, said Mr. Graham will be placed in charge of Elgin's new carbide tool program to be launched late in May.

★ ★ ★

He was formerly cutter engineer for the Ingersoll Milling Machine Company in Rockford, Ill. He holds a degree in civil engineering from the University of Michigan.

Carboloy Appoints Engineer

Jack A. Yoblin, former research metallurgist, **Titanium Metals Corp. of America,** was recently appointed carbide products development engineer for **Carboloy Department of General Electric Co.,** Detroit.

★ ★ ★

A metallurgical engineering graduate of Massachusetts Institute of Technology, his new responsibilities will include the evaluation of titanium carbide in carbide grades used for steel cutting application.

New Superintendent for Republic's Gadsden Works

Earl L. Shepherd has been named superintendent of the rod and wire mills at the **Republic Steel Corporation's** gulfsteel works at Gadsden, Ala., it has been announced by **E. I. Evans,** Southeastern district manager. He will succeed **H. M. Carr,** who is retiring.

Cleveland Tramrail Appoints Representative

John G. Frischkorn has been appointed district sales manager by the **Cleveland Tramrail Division** of **The Cleveland Crane & Engineering Co.,** Wickliffe, Ohio. His territory includes parts of West Virginia, Pennsylvania, New York and Eastern Canada.

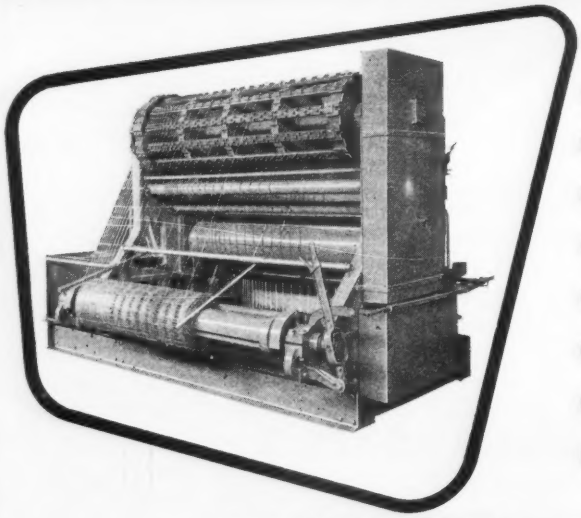
★ ★ ★

Mr. Frischkorn has had sixteen years' experience with Cleveland Tramrail as design engineer for overhead materials handling equipment. He also was with the Euclid Crane & Hoist Co. for six years where he was chief engineer and later general sales manager.

Louis Winkler Receives Award

Louis Harry Winkler, metallurgical engineer, **Bethlehem Steel Co., Inc.,** Bethlehem, Pa., and ASTM Past Director and Honorary Member, was one of five recipients of Missouri Honor Awards for Distinguished Service in Engineering presented by the University of Missouri at a special convocation in March on the program of the Centennial of Engineering Education at the University. An outstanding authority on railroad steel products and on wire rope, wire, and wire

Interlocking FENCE LOOMS



- Fastest — Most Efficient
- Preferred by Leading Mills
- Low Maintenance Cost
- Wrapped Stay Fence
- Straight Stay Wires
- Integrated — Space Saving
- Replaceable Main Bearings
- Single or Double Strands
- Years of Low Cost Production

Write for Detailed Information — Without Obligation

Interlocking Fence Co., Box 8, Morton, Ill.

Specialists In Fence Looms

NON-FERROUS METAL STATISTICS

Refined metals consumed in mill products 1/ in 1955 (preliminary) and in 1956, by months, gross weight in short tons

Period	Wire mills	Brass mills				
	Refined copper 2/	Refined copper 2/	Refined lead	Primary pig tin	Refined nickel	Slab zinc
1955	824,609	646,156	3,443	1,055	3,527	133,737
1956:						
January	77,293	65,519	300	135	368	12,203
February	71,838	63,703	345	138	411	11,680
March	82,678	60,542	329	128	368	11,884
April	81,871	60,035	291	(3)	(3)	11,800

1/ Data cover operations of 17 wire mills and 57 brass mills.
2/ Detailed information on consumption of refined copper is published in the Monthly Copper Report.
3/ Not available.

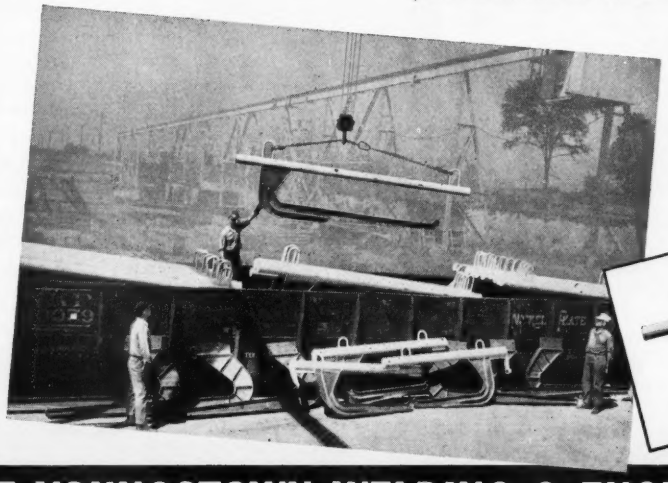
WELDCO

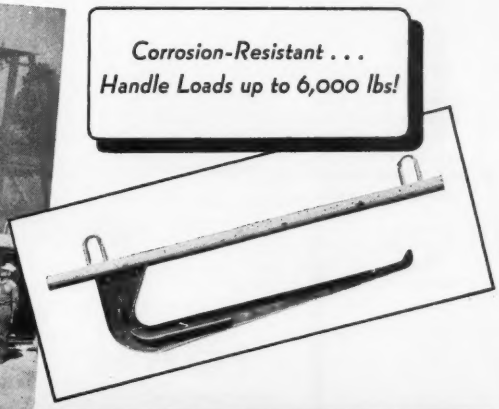
LIGHTWEIGHT HAIRPIN HOOKS

For Long, Heavy-Duty Service

In plants and wire mills everywhere, WELDCO Lightweight Hooks are replacing heavy, old-style hooks. For WELDCO Hooks are stronger, lighter in weight, easier to handle, more corrosion-resistant, carry heavier loads (up to 6,000 lbs.) easily and safely. And WELDCO Hooks are built for long, economical service . . . outlast heavy cast hooks 2 to 3 times.

Whether you need conventional pickling hooks or special adaptations, WELDCO engineers design and build to your exact specifications. For complete information and free literature, get in touch with us today.





THE YOUNGSTOWN WELDING & ENGINEERING COMPANY
3801 OAKWOOD AVENUE . . . YOUNGSTOWN 9, OHIO

rods, and on steel tubular products, Mr. Winkler was cited by Dean Croft in recognition of his "leadership in the development of technical codes for the design, manufacture, and testing of steel rails, locomotive forgings, wire and wire rods and tubular products," and for his "high ability to understand his fellow man, to provide effective and responsible technical leadership in the steel manufacturing industry."

Carboloy Appoints Research Engineer

Paul D. Wright, formerly associated with fuel element development engineering at General Electric's Hanford Atomic Products Operation, was recently appointed research engineer in the advanced development section of the company's **Carboloy Department** in Detroit.

★ ★ ★

A native of Saratoga Springs, N. Y., and an Army veteran of 5 years, Mr. Wright is a graduate chemical and metallurgical engineer of the University of Michigan. He joined G. E. in 1951.

Tennessee Coal & Iron Promotions

Four appointments to managerial posts has been announced by **Tennessee Coal & Iron Division of U. S. Steel Corporation** at Birmingham, Ala.

★ ★ ★

Haran W. Bullard has been promoted to assistant to the manager, manufacturing operations. Succeeding him as superintendent of mills, Fairfield Steel Works, is **George D. Brengleman,** until recently assistant general superintendent of the Ensley Steel Works.

★ ★ ★

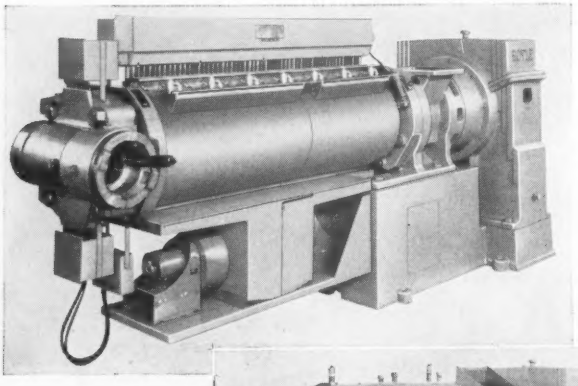
John J. Shannon will succeed Mr. Brengleman and **Robert Bruce** will succeed Mr. Shannon as superintendent of blast furnaces at the Ensley Steel Works. Mr. Bruce has been assistant superintendent of the blast furnaces since 1948.

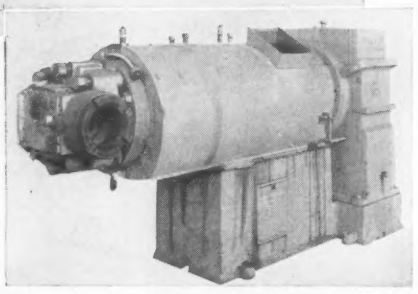
Made Technical Director of Resin Coatings Firm

J. E. George, President of **The P. D. George Company** of St. Louis announces the appointment of **Dr. H. J. Lanson as** Technical Director of the firm. In his new position, Dr. Lanson will coordiate the laboratory activities of the firm and direct an expanded Research and Development Program. He brings to the P. D. George Company nineteen years of broad experience in the Coatings field and is a well-known authority in the field of Drying Oils and Synthetic Coatings Resins. He is the author of many technical articles and has contributed to the Encyclopedia of Chemical Technology and the forthcoming Encyclopedia of Chemistry.

Sheet & Tube Expanding Capacity

In its annual report for 1955, **The Youngstown Sheet and Tube Company** announced an expansion program that will add one million tons of steel ingots to its annual





8½" Spirod extruder with side delivery head for jacketing. Up-graded from circulating type shown to the right.

EVER THINK OF UP-GRADING TO SPIROD®?

Yes, it can be—and is being—done. And Royle's traditional approach to extruder development, the retention of features that have stood the test of time, makes it possible. The one-piece cylinder with built-in hopper is replaced by a separate cast steel hopper section, a cast steel cylinder with deep grooves that create fin-like separations for the rod type heating elements and the selective evaporative cooling equipment. Head and stock screw, as usual, are designed for process requirements.

If you are operating an older type Royle extruder you should investigate up-grading to Spirod—the electrically heated extruder with high velocity evaporative cooling—for maximum efficiency in controlled operating temperatures.

Write for Bulletin # 463

JOHN ROYLE & SONS ROYLE PATERSON N. J. 1880

PIONEERED THE CONTINUOUS EXTRUSION PROCESS IN

London, England — James Day (Machinery) Ltd. — Hyde Park 2430 - 0456
Home Office — V. M. Hovey J. W. VanRiper — SHerwood 2-8262
Akron, Ohio — J. C. Clinefelter — BLackstone 3-9222
Los Angeles, Cal. — H. M. Royal, Inc. — LUdlow 9-3261
Tokyo, Japan — Okura Trading Co., Ltd. — (56) 2130 - 2149

capacity in the next two years and sharply increase its steel finishing output. The Company's present annual steelmaking capacity is 5,750,000 tons, 230,000 tons of which were added during 1955.

★ ★ ★

The report stated that expenditures for expansion, replacement and betterment during the next three years could total $250 million.

New Central Territory Office and Plant for ACP

The American Chemical Paint Company, Ambler, Pa., announces that it has acquired office and plant facilities at St. Joseph, Mo., and expects to be operating there about June.

★ ★ ★

The new centrally located ACP office and plant will serve a territory lying between the Mississippi River and the Rockies and from Canada to the Gulf of Mexico. Present plans include the production of metalworking chemicals (rust proofing and paintbonding phosphate coatings, phosphate coatings to facilitate cold forming operations, pickling acid inhibitors, oil well acidizing and corrosion inhibitors) and agricultural chemicals.

★ ★ ★

Heading the St. Joseph ACP branch will be **J. H. Abrams,** associated with the American Chemical Paint Company for many years in a supervisory capacity in its Pittsburgh Territory. In addition, technical representatives will provide technical servicing and consultation for ACP customers in the new Central U. S. territory.

Pacific Coast Brass Mill Nearing Completion

Production of copper and copper alloys in the last quarter of '56 by **American Brass Company's** $15,000,000 brass mill in Los Angeles, is predicted by **C. Russell Epley,** general manager of the company's Los Angeles Division, who stated that construction of the new mill was proceeding on schedule.

★ ★ ★

The new mill will produce copper and copper base alloys in the form of sheet, strip, rod, tube and drawn products, as well as special shapes. Annual capacity is estimated at 30,000,000 pounds. When in full operation, the mill will furnish employment for some 500 persons.

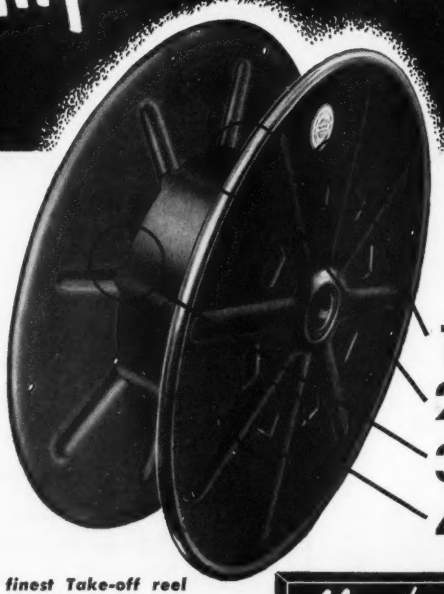
Scovill Features New Payoffpak For Copper-Base Alloy Wire

Scovill Manufacturing Company, Mills Division, Waterbury, Connecticut, announces immediate availability of an improved **Payoffpak** self-feeding container for its copper-base alloy wire, optional to wire formers without extra cost.

★ ★ ★

Principal advantages of the new packaging method are found in the fact that the wire feeds directly into the cylindrical barrel-like container from the wire drawing machine at the mill and then pay-off continuously and smoothly directly from the **Payoffpak** to the cus-

Important DIFFERENCES
BETWEEN JUST ANY REEL AND
All Welded MPS



TAKE-OFF REELS

Three important differences that mean longer reel life in both processing and handling of all types of insulated wires in your plant.

1 New MPS **deep wide, straight type embossed radial rib** adds considerable strength to reel heads over the old style narrow tapered rib.

2 **Increased height of the curled edge** adds even more strength and rigidity, especially to the rims.

3 Furnished with **rib fillers** that are projections on the end of the barrels that fit into the embossed radial ribs thereby **eliminating any marking of the plastic or rubber insulated wires** at the junction of head-barrel.

4 Finally, the **all welded "J" type construction** of the entire reel completes the picture.

The finest Take-off reel you can buy.
We invite your inquiries — let us tell you more about MPS Take-off Reels. Write us today.

Mossberg PRESSED STEEL Corporation

18 West Street — Attleboro
Massachusetts U. S. A.
Telephone Attleboro 1-0848

#109

tomers' wire forming machines. This eliminates the need for reels or spools. **Payoffpaks** are simply trucked from storage to the machines, opened up and the run starts. Another important feature is the availability of up to 500 lbs. of wire in a single ready-to-run continuous strand. This eliminates machine down times when constantly changing small coils of wire.

★ ★ ★

Additional advantages include full protection to the wire in transit and in storage; simplified materials handling, with uniform, easily movable and stackable wire containers that are clearly labeled, with no kinked or damaged wire.

★ ★ ★

Scovill packages the following copper-base alloy wire in **Payoffpaks** at the customer's option and in quantities up to 500 lbs. per container, at no additional cost: Diameters .016" to .060" inclusive, any temper except soft; Diameters over .060" to .212" inclusive, soft temper to 2 numbers hard. Further information may be obtained by writing to Scovill Manufacturing Company, 99 Mill Street, Waterbury 20, Connecticut.

Announces High Speed Wire Straightener

As a result of a study of industry's needs **The Geo. C. Patterson Machine Co.**, 3409 Trumbull St., Cleveland, announces a completely new idea in a wire straightening and cutting machine.

★ ★ ★

A precision machine tool, the Patterson Hi-Speed Automatic Wire Straightening and Cut-Off Machine is especially designed to meet the requirements of fabricators of wire products.

★ ★ ★

A line of machines is available handling wire from 1/16" to ¼", from 1/16" to 5/16" and from ¼" to ½" in diameter.

★ ★ ★

A completely new clutch and trip mechanism that is positive and sensitive, makes its first appearance on these machines, making it possible to handle wire of very small diameters successfully.

★ ★ ★

The machine has a variable speed drive and high wire speeds are possible, with the cut-off mechanism automatically synchronized.

★ ★ ★

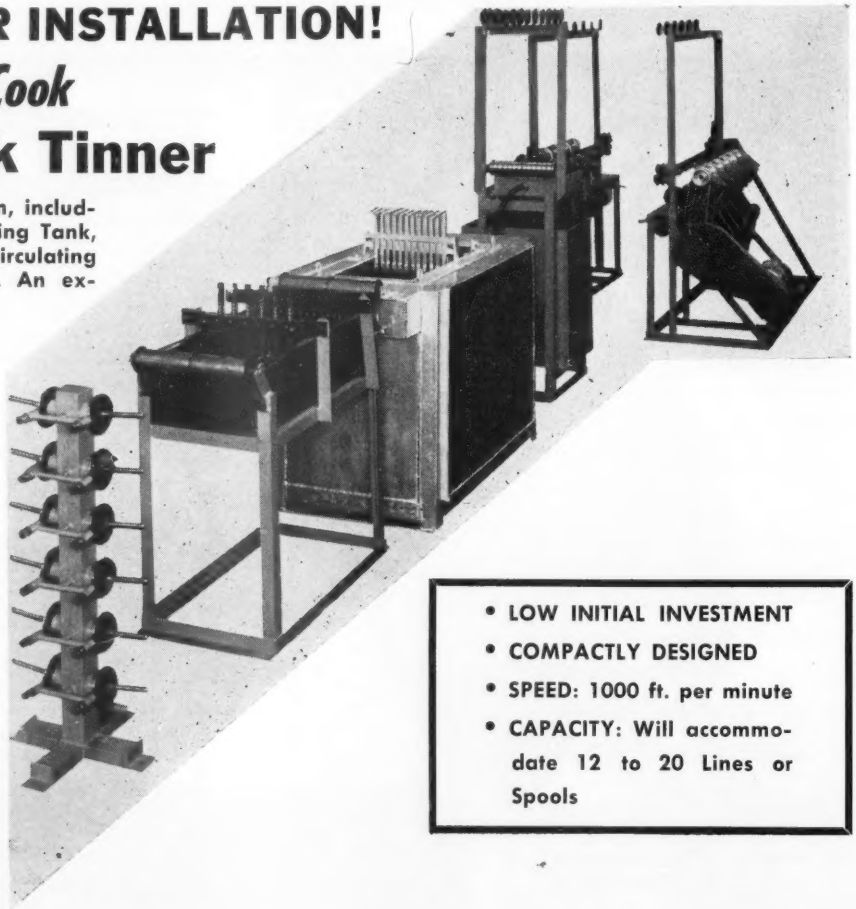
Another feature of the new machines is a wire catcher pan that eliminates may of the problems of wire fabricators. The pan runs the full length of the machine and is made in two sections joined by a continuous piano-type hinge. A locking lever mounted on the extreme end of the machine permits the operator to empty the pan into a tote box.

NOW READY FOR INSTALLATION!

The New Cook

Hot-Dip Tank Tinner

Here's a complete tinning system, including: Supply Stand, Flux Pot, Tinning Tank, Water Cooling Tank with Recirculating Pump and Spool Take-Up Unit. An extremely fast unit producing uniformly tinned wire.



- **Can be built to accommodate customer's specifications as to supply and take-up spools.**

- **LOW INITIAL INVESTMENT**
- **COMPACTLY DESIGNED**
- **SPEED: 1000 ft. per minute**
- **CAPACITY: Will accommodate 12 to 20 Lines or Spools**

A complete Line of Quality Machinery For The Wire and Cable Industry To Meet Rigid Specifications.

COOK
MANUFACTURING CO.
50 EAST 25TH STREET
PATERSON, N. J.
ARMORY 4-6380

A Review of Recent Wire Patents

The data listed below is only a brief review of recent patents pertinent to the readers and subscribers of this publication.

Complete copies of these patents may be obtained by writing to the publisher of this magazine and remitting 50¢ for each copy desired. For orders received from outside the United States the cost will be $1.00 per copy.

No. 2,743,838, ADJUSTABLE DISPLAY BASKET, patented May 1, 1956 by James F. Peterson, Eugene, Oreg., assignor to N. & P. Enterprises, Inc., Eugene, Oreg., a corporation of Oregon.

This basket comprises four quadrilateral, upright wire frames hingedly connected along their upright edges and a vertically adjustable wire bottom.

★ ★ ★

No. 2,744,153, INSULATED WIRE, patented May 1, 1956 by James E. Flood, Norwich, Conn., assignor to The Plastic Wire & Cable Corporation, Borough of Jewett City, New London County, Conn., a corporation of Connecticut.

An insulated electrical conductor is disclosed comprising a wire conductor, a primary insulating jacket surrounding and in contact with the conductor, the jacket having a cementitious surface layer, an insulating and strengthening barrier in the form of a serving comprising a number of separate, unconnected parallel filaments of glass filamentary material on the layer, this surface layer including a volatile solvent and having a thickness sufficient to enable embedding of the separate glass filaments therein to varying depths in accordance with the winding tension in the separate filaments before the solvent has evaporated and while the layer is spongy.

★ ★ ★

No. 2,744,289, MACHINE FOR MOLDING A SUCCESSION OF BEADS ON A WIRE, patented May 8, 1956 by Hans H. Wanders, Hingham, Mass.

This apparatus includes a grooved wheel with a succession of separate bead molds arranged along the groove, which latter receives the wire and the molds receive the material to provide the beads. The wheel also carries a cover part for the molds.

★ ★ ★

No. 2,744,546, MACHINE FOR BENDING WIRE INTO IRREGULAR SINUOUS FORM, patented May 8, 1956 by Richard J. Williams, Birmingham, Mich., assignor to American Metal Products Company, Detroit, Mich., a corporation of Michigan.

The wire is bent upon forming links which are pivoted to link bars and the links are movable from extended aligned relationship to predetermined sinuous relationship.

★ ★ ★

No. 2,745,472, ZIGZAG SPRING CUSHION HAVING CENTRAL SUPPORT, patented May 15, 1956 by Hyland C. Flint, Birmingham, Mich., assigner to American Metal Products Company, Detroit, Mich., a corporation of Michigan.

This structure includes a series of sinuous springs each having an arched load supporting portion and reversely bent end portions with the reversely bent end portions secured in fixed relation to cross member with a flexible border wire of the shape of the cushioning frame having end portions joined by side portions, and a series of sinuous spring strips secured across the end portions of the resilient border wire.

★ ★ ★

No. 2,745,557, ALL-WIRE COLLAPSIBLE NEWSPAPER RACK, patented May 15, 1956 by Lewis C. Martin, Nashville, Tenn., George B. Moffett, Mobile, Ala., and Gilbert O. Erickson, Nashville, Tenn.

The rack is constructed wholly of wire and includes a pocket for a bundle of newspapers.

★ ★ ★

No. 2,746,135, WIRE-REINFORCED RUBBER ARTICLE AND METHOD OF MAKING THE SAME, patented May 22, 1956 by Arch W. Harris, Euclid, Ohio, assignor to United States Steel Corporation, a corporation of New Jersey.

A method of bonding rubber to steel wire is disclosed including electrodeposit-

If you are still using costly diamond dust for refinishing your wire drawing dies, you'll be amazed at the savings you can make by switching to NORBIDE Abrasive. Wire mills everywhere have found that this abrasive — the hardest manufactured abrasive commercially available — is ideal for ripping and semi-finishing operations.

Many of our customers order NORBIDE Grain in 100 lb. drums. Many others order and re-order ¼ lb. and ½ lb. cans. No matter what your requirements are we can fill your order promptly from stock.

For details and prices on this cost-cutting abrasive write for Form 559.

NORTON BORON CARBIDE

NORTON COMPANY
45 New Bond St. • Worcester 6, Mass.

NORBIDE® | *The hardest manufactured abrasive commercially available!*

ing as such a coating of copper-base alloy on the wire, the coating containing between 50 and 95% copper and between 5 and 50% of a metal of the class of zinc and tin, the coating containing between 50 and 90% copper when the metal of the class of zinc and tin is zinc and between 80 and 95% copper when the metal of the class of zinc and tin is tin, reducing the size of the copper alloy plated wire in a drawing operation, embedding the coated wire in a vulcanizable rubber composition, and vulcanizing the rubber composition in direct contact with the surface of the drawn copper alloy plated wire.

★ ★ ★

No. 2,746,335, PIANO STRING, patented May 22, 1956 by Robert E. Johnson, Chicago, Ill.

A piano string is disclosed comprising a core wire and a covering wire wound thereon in a plurality of contiguous turns, the turns adjacent at least one end of the covering wire being flattened to form a tapered end on the covering wire in tight engagement with the core wire.

★ ★ ★

No. 2,746,511, APPARATUS FOR UNWINDING COILS, patented May 22, 1956 by Harold Branthoover, Toledo, Ohio, assignor to Donovan Steel Pickling Company, Toledo, Ohio, a corporation of Ohio.

More specifically, the apparatus is for unwinding coils of sheet metal strips.

★ ★ ★

No. 2,746,512, ATTACHMENT FOR WIRE COILING MACHINE, patented May 22, 1956 by John C. Hampson, Detroit, Mich., assignor, by mesne assignments, to Rockwell Spring and Axle Company, Coraopolis, Pa., a corporation of Pennsylvania.

This attachment is for a wire coiling machine wherein a length of wire stock is fed against an aligned coiler block which coils the wire and forms a helically coiled spring which has a longitudinal axis extending laterally of the direction at which the wire stock engages the coiler block and which forms the spring by advancing successive rotating coils laterally outwardly thereof, a spring supporting rod-like core, support means for rigidly supporting the core as a cantilever in parallelism with the longitudinal axis of the spring with the free end of the core directed toward the coiler block, are provided.

★ ★ ★

No. 2,746,513, WIRE STRAIGHTENING AND TENSIONING ATTACHMENT FOR BALING MACHINE, patented May 22, 1956 by Arthur L. Kiesow and Paul E. Rehr.

The attachment is adapted to be mounted between wire guides mounted on the machine.

★ ★ ★

No. 2,746,609, WIRE SHELF FOR CLOSETS AND THE LIKE, patented May 22, 1956 by Margaret E. Welsh San Francisco, Calif.

A foldable shelf is provided comprising a number of wire strands.

★ ★ ★

No. 2,747,453, HEADLESS NAIL, patented May 29, 1956 by Charles M. Lindstrom, Westerly, R. I., assigner to Bostitch, Inc., Stonington, Conn., a corporation of Rhode Island.

More particularly, this device is a staple having opposite legs joined together by a closed loop.

★ ★ ★

No. 2,748,238, METHOD OF WELDING WIRES UNDER TENSION, patented May 29, 1956 by Renn Zaphiropoulos, Oakland, Calif., assignor to Chromatic Television Laboratories, Inc., New York, N. Y., a corporation of California.

In the art of welding a number of tensioned wires to a frame made up of two sets of oppositely-disposed sections so that the wires extend in substantially parallel relationship across the window area defined by the two sets of oppositely-disposed sections, the inventor includes a step of compressing the wire during the welding operation against that particular frame section which is being welded for a sufficient distance along the wire in each direction from the welding area so that the tension in the wire across the window area of the frame is retained regardless of the detensioning effect induced by softening of the wire material as a result of the welding operation.

Have You Read

"STEEL WIRE IN AMERICA?"

by Kenneth B. Lewis

The price is $15.00

For Higher Output
Closer Tolerances
Faster Start Ups
Lower Maintenance

Great claims? No, real facts. Let us *demonstrate* to you the superior performance of these new extruders with this exclusive combination of design features: Le/D Ratio of 20:1, Fully Automatic Thermo-Control, Herringbone Gear Transmission, Heavy Duty Thrust Assembly, Flexible Coupling and Completely Wired Control Cabinet. Available with Le/D ratios of 16:1, 20:1 and vented 24:1 in 2½", 3½", 4½", 6", and 8" sizes.

Technical bulletins No. E-2, E-3 tell you how you can get more pounds per hour of better quality extrusions.

Get bulletins today.

PRODEX EXTRUDERS

PRODEX
CORPORATION
FORDS, N. J. • HILLCREST 2-2800

PRIMARY ALUMINUM PRODUCTION IN THE UNITED STATES
(in pounds)

1956	
April	289,452,612
March	291,790,372 *
Total for year through April	1,127,555,198
1955	
April	252,788,467
Total for year through April	1,002,211,693
All-time record month	
March 1956	291,790,372 *
All-time record quarter	
1st 1956	838,102,586

* Revised from previous report

May 16, 1956

New Development May Extend The Use of Aluminum for Motor Windings

Aluminum, Ltd. metallurgists at Shawinigan Falls, Quebec, have succeeded in developing an anodized aluminum wire, the coating of which is both ductile and insulating.

★ ★ ★

The anodizing process, it is believed, may lead to the substitution of aluminum for copper in electric motor casts, since the thin coating produced by the process will stand up under heat conditions that would destroy the insulating properties of organic coatings when temperatures rise above 80 to 100 degrees C.

★ ★ ★

The new magnet wire is expected to make possible smaller motors that can operate at higher temperatures.

★ ★ ★

Oldest Suspension Bridge Dedicated

The historic Wheeling (W. Va.) Bridge is the oldest suspension bridge in the Western Hemisphere in use today. On May 20, 1956 the bridge was dedicated as a national memorial to its builder, **John A. Roebling,** who drew the wire and installed the cables in 1856.

★ ★ ★

Dedication ceremonies were jointly sponsored by the engineering societies of West Virginia and Ohio, the two states linked by the bridge. They included the unveiling of a plaque to John A. Roebling by his great grandson, **Ferdinand W. Roebling III;** an historical pageant depicting the history of the bridge; and an address by **Dr. D. B. Steinman,** the well-known engineer-historian who supervised the recent reconstruction of another Roebling enterprise, the Brooklyn Bridge in New York.

★ ★ ★

The bridge is about to undergo extensive reconstruction, including widening and modernization of the century-old roadways. Estimated cost of the overhaul is $500,000. The entire cost of the bridge when it was built by Roebling in 1856 was $42,000.

Addition Planned by William Brand

Construction has started on a $300,000 addition to the plant of **William Brand and Co., Inc.,** in North Windham, Conn. The new manufacturing section will increase the present facilities by approximately 33,000 square feet and will be completed early in October.

James L. Entwistle

ANNOUNCES—

★ A NEW COMPANY . . .
★ A NEW ADDRESS . . .
★ VAST NEW SERVICES!

FIRST, we wish to make it known that Mr. James L. Entwistle is no longer associated with the former James L. Entwistle Co. of 1475 Elmwood Avenue, Cranston (Prov. 7), R. I., now known as the Entwistle Manufacturing Corporation at that address.

NOW, TO NEW BUSINESS—

The new James L. Entwistle Co. revives the former Entwistle partnership which operated in Pawtucket, R. I. for so many years, and which originated all of the improvements in wire reeling, coiling and spark testing . . . measuring, marking and labeling which have been made over the past thirty years.

The new company is now engaged in designing and engineering new, and vastly improved models of Wire Machinery on which progress has been virtually at a standstill over the past three years.

At present, the James L. Entwistle Co., itself, is not engaged in manufacturing, but has made arrangements with excellent and highly responsible manufacturers in the United States, England and France for the production of its designs.

In addition to the designing and engineering of Wire and Television Tube Machinery, the new company, with branch offices in London and Paris, is in a position to promote the foreign use of patents, processes, products and equipment developed by your company.

Through our foreign associate manufacturers, we are in a position to have products made and sold abroad in lieu of exporting from the U. S., and are also situated to negotiate with foreign owners of patents, products, processes and equipment which you may be interested in obtaining for use in this country.

Our overseas activities are presently limited to Western Europe and the British Isles.

Write or phone for complete information on our new equipment, machines and services. A preliminary consultation puts you under no obligation whatsoever.

James L. Entwistle Co.

INTERNATIONAL BUSINESS COORDINATORS JLE

CONSULTING ENGINEERS • MACHINE DESIGNERS
761 PARK AVENUE • CRANSTON 10, R. I., U.S.A.

London • Paris • Cable "Jalenco" Providence

Telephone STUART 1-5656

Wire Machinery Firm Expanding

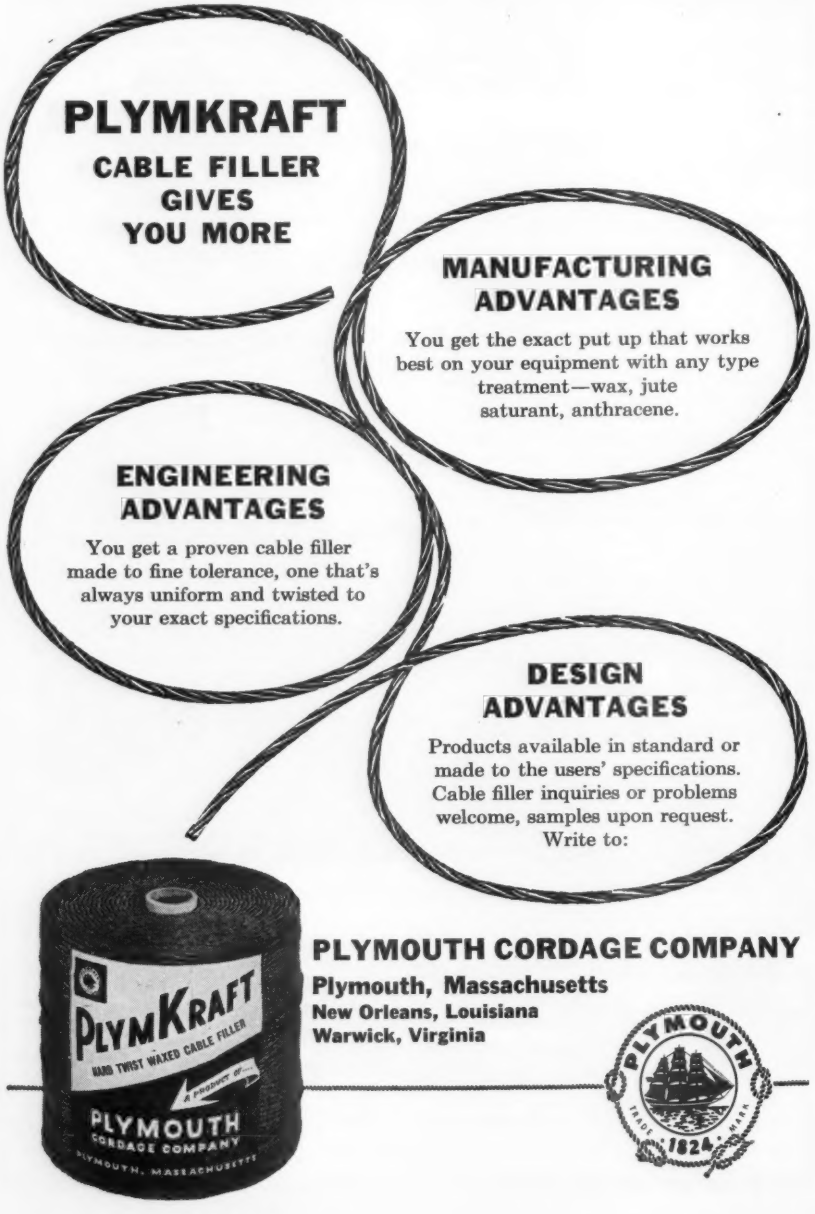
Expansion of the production facilities of the **Woodside Machinery Division** of **International Wire Products Corp.,** Midland, N. J., has been announced by **Howard D. Banks,** the Division's manager.

★ ★ ★

The company has been manufacturing wire machinery for over 25 years and now occupies more than 25,000 square feet of floor space. The expansion program will enable the firm not only to increase its capacity for turning out standard equipment, but to devote considerably more attention to designing and making custom built precision wire machinery, especially such items as drawing and annealing equipment for stainless steel, Monel and special alloy wires.

★ ★ ★

One of the unusual features of the service offered by Woodside is that every piece of equipment built is tested in the company's own wire mill before shipment to a customer.


PLYMKRAFT
CABLE FILLER
GIVES
YOU MORE
MANUFACTURING ADVANTAGES
You get the exact put up that works best on your equipment with any type treatment—wax, jute saturant, anthracene.
ENGINEERING ADVANTAGES
You get a proven cable filler made to fine tolerance, one that's always uniform and twisted to your exact specifications.
DESIGN ADVANTAGES
Products available in standard or made to the users' specifications. Cable filler inquiries or problems welcome, samples upon request. Write to:
PLYMKRAFT
HARD TWIST WAXED CABLE FILLER
PLYMOUTH
CORDAGE COMPANY
PLYMOUTH, MASSACHUSETTS
PLYMOUTH CORDAGE COMPANY
Plymouth, Massachusetts
New Orleans, Louisiana
Warwick, Virginia
PLYMOUTH
1824

The company's service includes the designing of complete plants and equipping them ready to operate. Such a job was recently completed for the **Randy Wire Works,** North Bergen, N. J., and similar equipment was produced for **Hi-temp Wires, Inc.,** Mineola, N. Y., and others.

Borax Consolidated to Transfer U.S. Assets to New American Company

The Directors of **Borax Consolidated, Limited,** have announced in London that they will form a company in the United States to take over the Company assets and operations in America. The consent of the United Kingdom Treasury to this transfer has been granted.

★ ★ ★

Completion of the transfer of these assets will bring to the new corporation extensive and valuable boron deposits located at Boron, California, and factories for the production of borax, boric acid and numerous inorganic and organic boron compounds. The existing Company has now under way a program of expansion and modernization at Boron, involving conversion of its mining method to an open pit process and a substantial increase in manufacturing capacity.

★ ★ ★

H. M. Albright, President of **United States Potash Co.,** also has announced that there have been discussions between officers of that company and the directors of Borax Consolidated Ltd. and officers of its American Division, **Pacific Coast Borax Co.,** with a view to a possible merger of United States Potash Co. with the new American company to be established.

Anaconda Expands Telephone Cable Facilities

The Anaconda Wire & Cable Company announces that extensive equipment is now being installed for the production of paper-insulated, lead-covered telephone cable. It is anticipated that these new facilities will be in production during the second half of this year.

AMERICAN IRON AND STEEL INSTITUTE

350 FIFTH AVENUE, NEW YORK 1, N. Y.

AIS 10

Total Number of Companies Included 131

APRIL - 1956
Month

SHIPMENTS OF STEEL PRODUCTS
ALL GRADES INCLUDING CARBON, ALLOY AND STAINLESS
(Net Tons)

Covering Net Shipments (Excluding Shipments to Members of the Industry for Conversion into Further Finished Products or for Resale)

Steel Products	Items	CURRENT MONTH 1956 Carbon	Alloy	Stainless	Total	Percent of Total Shipments	Prior Year (1955) Percent of Total Shipments	YEAR TO DATE 1956 Carbon	Alloy	Stainless	Total	Percent of Total Shipments	Prior Year (1955) Percent of Total Shipments
Ingots and Steel Castings	1A	39,150	17,662	2,457	59,269	0.8	0.9	* 220,965	63,457	9,601	* 294,023	1.0	0.6
Blooms, slabs, billets, sheet bars	1B	155,981	52,374	3,810	212,165	2.7	3.3	* 671,880	215,963	10,721	* 898,564	2.9	3.4
Tube rounds	1C	191	290	3	484	-	-	732	934	60	1,726	-	-
Skelp	2	18,417	-	-	18,417	0.2	0.2	62,138	-	-	62,138	0.2	0.2
Wire rods	3	94,715	2,045	375	97,135	1.3	1.4	395,924	9,147	1,721	406,792	1.3	1.4
TOTAL SEMI-FINISHED		308,454	72,371	6,645	387,470	5.0	5.8	1,351,639	289,501	22,103	1,663,243	5.4	5.6
Bars—Hot rolled (incl. light shapes)	14	633,865	162,169	5,347	801,381	10.3	10.3	2,525,384	759,114	20,554	3,305,052	10.6	10.4
Bars—Reinforcing	15	228,483	-	-	228,483	2.9	2.5	801,843	-	-	801,843	2.6	2.2
Bars—Cold finished	16	135,219	26,398	5,458	167,075	2.1	2.2	556,929	116,021	21,260	694,210	2.2	2.2
Tool steel	17	1,750	9,970	-	11,720	0.2	0.1	6,341	38,475	-	44,816	0.2	0.1
TOTAL BARS AND TOOL STEEL		999,317	198,537	10,805	1,208,659	15.5	15.1	3,890,497	913,610	41,814	4,845,921	15.6	14.9
Wire—Drawn	23	274,151	4,711	2,625	281,487	3.6	3.9	1,081,550	18,987	12,040	1,112,577	3.6	3.7
Wire—Nails & staples	24	49,562	-	-	49,562	0.6	0.9	204,036	-	-	204,036	0.6	0.8
Wire—Barbed & twisted	25	8,708	-	-	8,708	0.1	0.2	36,808	-	1	36,809	0.1	0.2
Wire—Woven wire fence	26	30,215	-	-	30,215	0.4	0.5	117,230	-	-	117,230	0.4	0.6
Wire—Bale ties	27	5,384	-	-	5,384	0.1	0.1	17,196	-	-	17,196	0.1	0.1
TOTAL WIRE & WIRE PRODUCTS		368,020	4,711	2,625	375,356	4.8	5.6	1,456,820	18,987	12,041	1,487,848	4.8	5.4
Sheets—Hot rolled	31	758,303	37,254	2,413	797,970	10.2	10.9	* 3,117,856	168,701	8,132	* 3,294,689	10.6	11.6
Sheets—Cold rolled	32	1,172,163	5,172	13,481	1,190,816	15.3	17.8	5,020,722	25,773	52,621	5,099,116	16.4	18.6
Sheets—Galvanized	33	266,728	-	-	266,728	3.4	3.3	1,100,382	-	-	1,100,382	3.5	3.3
Sheets—All other coated	34	20,549	-	-	20,549	0.3	0.3	91,138	-	-	91,138	0.3	0.3
Sheets—Enameling	35	Not Available. Included in Cold Rolled Sheets.											
Electrical sheets & strip	36	11,007	65,474	-	76,481	1.0	0.9	46,602	253,761	-	300,363	1.0	0.9
Strip—Hot rolled	37	155,433	2,911	377	158,721	2.0	2.5	672,652	12,694	1,340	686,686	2.2	2.5
Strip—Cold rolled	38	125,611	1,764	16,827	144,202	1.9	1.9	537,719	6,449	79,707	623,875	2.0	2.1
TOTAL SHEETS AND STRIP		2,509,794	112,575	33,098	2,655,467	34.1	37.6	*10,587,071	467,378	141,800	* 11,196,249	36.0	39.3
TOTAL SHIPMENTS (1956)		7,206,375	519,368	58,130	7,783,873	100.0	xxx	*28,667,276	2,187,164	236,765	* 31,091,205	100.0	xxx
TOTAL — PRIOR YEAR (1955)		6,767,315	454,219	57,787	7,279,321	xxx	100.0	24,753,571	1,710,340	213,154	26,677,065	xxx	100.0

NIEHAUS

WIRE STRANDING
ROPE CLOSING
CABLE MAKING

MACHINES

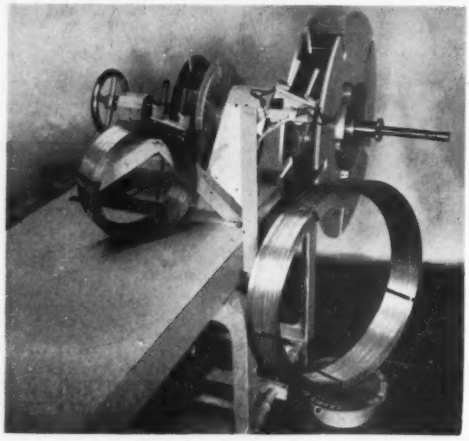
Cabling machines for steel, copper and aluminum wires, rubber and telephone strands

MASCHINENFABRIK K. A. NIEHAUS • GERMANY
DÜSSELDORF-RATH

Looking for Precision Winding?

We have it in the

Boyd MICRO-SPOOLER



If you are spooling or coiling welding wire for inert gas or submerged arc processes, you will be interested in the MICRO-SPOOLER.

Perfect layer winding on the disposable spool or, with modification of the machine, in self-contained coils has been achieved by the Spooler.

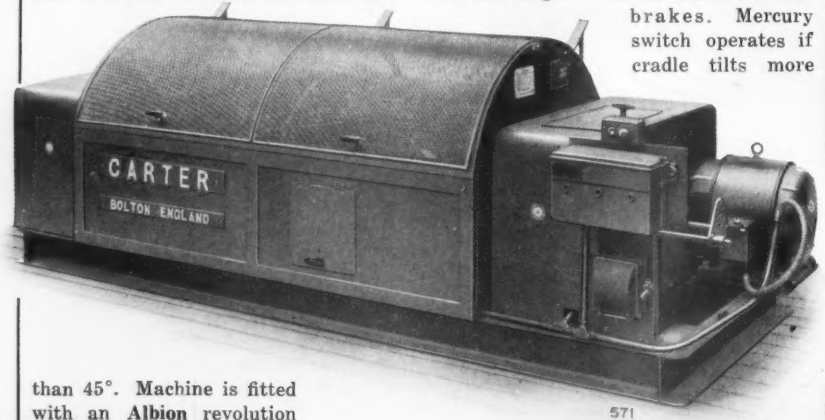
We will wind or coil a sample of your wire or demonstrate the Spooler for your engineers at our plant.

BOYD & SONS MANUFACTURING COMPANY

1434-38 Callowhill Street — Philadelphia 30, Penna.

IMPROVED, HIGH SPEED, DOUBLE TWIST, SINGLE HEAD BUNCHING MACHINE

Size of bobbin—18" Dia. x 9" traverse, **Speed of cage** 900 R.P.M. producing 1800 twists/minute, forward and reverse. **Horsepower** 10. Right or left hands lays obtainable. Drive at both ends of bobbin cage. Two electro-mechanical brakes. Mercury switch operates if cradle tilts more than 45°. Machine is fitted with an **Albion** revolution counter to record output.



B. & F. CARTER & CO., Ltd. BOLTON, ENGLAND
Telegrams "BRAIDERS BOLTON"

MAKERS OF PLANT FOR
ELECTRIC CABLE, BRAIDING & WIRE ROPE

Six Advantages of Wire in Product Design

(*Continued from page* 764)

and welding techniques which may lend themselves to the manufacture of wire chair backs.

★ ★ ★

This information source, then, bolsters product design and development, contributes to tooling and production economies and insures greater accuracy of cost estimates and quotations. In short, the basic advantages of wire can be more fully realized when strengthened by a formulated system of case history data.

AS&W Places New Rod Mill in Operation At Its Cuyahoga Works

(*Continued from page* 766)

through separate adjustable speed motors and the stripping and coil discharge mechanisms are electrically operated with all motors fully synchronized and interlocked. Dynamic braking is used to stop the reels prior to discharging of finished coils.

★ ★ ★

Through use of various stands available the mill will produce both fine and coarse rods in bundles up to 1200 pounds in contrast to former bundles of 300 to 600 pounds. This speedy production unit plus increased bundle size will in turn enable customers of American Steel & Wire to achieve maximum efficiency.

★ ★ ★

Many customers in the bolt, screw and other fastener industries, welding, spring, and automotive parts business have material handling equipment capable of handling rod bundles in excess of 1,000 pounds. The larger bundles lend themselves to the continuous operation of present-day manufacturing equipment.

★ ★ ★

The rolling operation is controlled from one main air-conditioned operating pulpit. From here the operator can at all times see each

stand of the mill and can adjust the speed of each stand as conditions require. In addition to the main operating pulpit, there is also a control desk for the furnace discharge operator; a control desk for crop and cobble shears; and separate pulpits for laying and pouring reels. The operators in these pulpits can control the rotary dividing shears and switches, the reel pipe sprays, the reel drives, strippers, pushoffs, fans, coil conveyor and hook carrier.

Wire Packaging Methods Cuts Shipping Costs

(*Continued from page* 774)

matic let-off reel with detachable flange, a saddle block for assembling the reel and an ingenious pneumatic coil lifter to transfer the coil from horizontal to vertical position.

Equipment

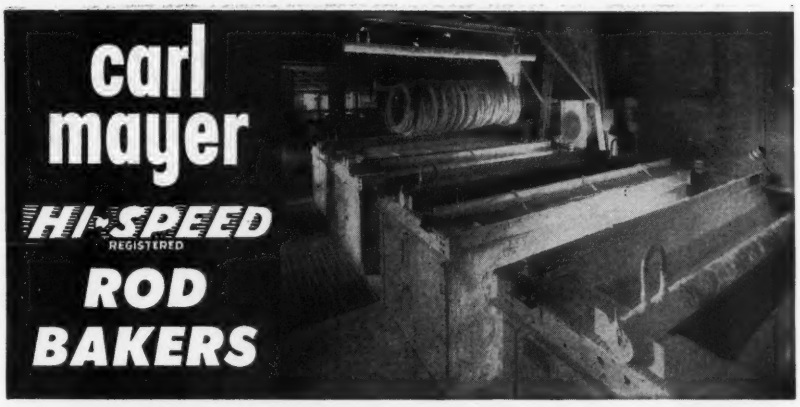
The cast aluminum let-off reel has six radial slots in each flange and a spider which is inserted into the paper composition core of the wire coil. A 3-inch nut holds the demountable flange securely in place.

★ ★ ★

The let-off reel is designed with a donut-shapped rubber air bag at one end. When inflated, the bag draws the reel flanges together, exerting a squeezing effect on the wire. After the steel bands are cut and pulled out through the slots, the wire is ready for paying off from a conventional let-off stand. Uniform flange pressure is maintained throughout the payoff to eliminate kinking, tangling or breaking, thus preventing shutdowns and speeding output.

★ ★ ★

The simple pneumatic coil lifter —another of the company's developments — affords convenient positioning and handling of the coil from the pallet to the saddle block. It is composed of a tubular metal core with a pneumatic sleeve to grip the inside circumference of the coil, and a hoist track. This assembly permits positioning of the wire either horizontally or vertically by means of a trolley riding on a quarter-circle track. When the crane hook is attached



Faster baking, greater fuel economy, maximum production efficiency are just a few of the results of the exclusive heating arrangement of the Carl Mayer Hi-Speed Rod Baker. It also has a patented blow-off feature which removes moisture without damage to coils.

Here are just a few of our many satisfied customers:

American Steel & Wire Co.
Atlas Steel Co.
Colorado Fuel & Iron Corp.
Crucible Steel Co. of America
B. Greening Wire Co., Ltd.
Indiana Steel & Wire Co.
Jones & Laughlin Steel Corp.
Republic Steel Corp.

Write for Bulletin No. 350

Patent Nos.
U. S. A. 2,296,361 2,323,828 2,235,559
Canada 396,144 401,589

THE carl mayer CORP.
3030 EUCLID AVE., CLEVELAND 15, OHIO

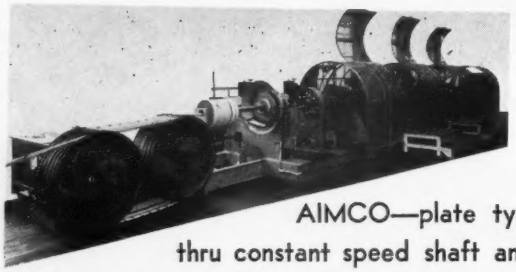
OTHER PRODUCTS: Core Ovens • Mold Ovens • Welding Rod Ovens • Heat Treating Ovens & Furnaces • Special Processing Equipment and Accessories.

MACHINES FOR COPPER • STEEL • BRONZE ALUMINUM • ALLOY WIRES

SPECIALIZED EXPERIENCE
TWISTING • STRANDING
BUNCHING
CONTINUOUS TENSION CONTROL
FOR PRECISION-QUALITY
HASKELL-DAWES MACHINE COMPANY

HASKELL-DAWES MACHINE COMPANY
2231 E. ONTARIO STREET, PHILADELPHIA 34, PENNA.

4-WIRE TWISTING MACHINES



CABLE REELS 48" DIA.-
31" O. A. WIDTH.

FILLERHEAD 24 PACKAGES
12" DIA., 12" TRAVERSE.

AIMCO—plate type serving head driven thru constant speed shaft and variable speed drive. Taping head 24" pad driven thru constant speed shaft and variable speed drive.

Capstans double 6 groove 42" root diameter. Rates of lay from 3" to 50". Flyer speed 8 steps from 600 to 34 R.P.M. Handles large diameter wires on cradle reels.

An exceedingly efficient and versatile machine.

THE EDMANDS CO. 860 WELLINGTON AVE., CRANSTON 10, R. I.

PROTECT . . . . .
YOUR PLANT with
HAUGER-BEEGLE PROTECTIVE COATINGS

Protection! These coatings will provide you with complete protection against acids, alkalies, solvents and the deteriorating effects of weather and abuse in the

CLEANING HOUSE • GALVANIZING ROOM
TINNING AREA

- Epoxy Maintenance Finishes
- Vinyl Maintenance Finishes
- Acrylic Glass Coatings
- Vinyl Wire Coatings
- Decorative Finishes
- Aisle & Traffic Marking

Your inquiries are invited.
Send for full information.

HAUGER-BEEGLE ASSOCIATES, INC.
4900 SOUTH PEORIA STREET, CHICAGO 9, ILLINOIS

to the trolley and the load hoisted, precise balance of the coil allows easy one-man positioning.

★ ★ ★

The packaged wire has been tested extensively and has been proven successful under production conditions for a period of four years.

Nail Packaging Method Increases Sales

(*Continued from page* 776)

shape and weight, the smaller boxes make highly stable pallet loads for carrier shipment.

★ ★ ★

The box's unique opening method meant even greater convenience in handling, and a sturdy, reusable container for nails. A liner in the box gives the walls double-strength, for extra vertical rigidity. A perforation runs around the center of all four sides. During transit, the box is completely sealed at top and bottom. To open it, the workman or dealer need only strike the sides along the line of the perforation with a hammer, breaking the box in half, the top half forming a tight-fitting cover. The box can be moved from place to place, opened and closed conveniently, until the supply of nails is exhausted.

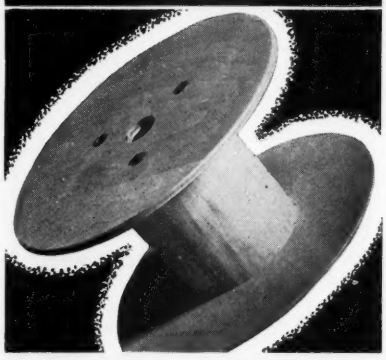
Retail Nail Pack

The second package, a retail nail box, was introduced in May 1955, just at the right moment to meet the needs of retail hardware stores making the transition to a self-service operation. Three sizes of package are used—5, 10 and 25 pounds in weight. These sizes are easy to display and handle in a retail store on a "serve-yourself" basis. Printing on the outside surface makes contents identification an easy matter.

★ ★ ★

The customer who buys the package and takes it home can count on using it as a box for his nails and forget about the tin-can he previously used. Moisture-resistant, the corrugated board will hold up no matter where the box of nails is stored or how repeatedly it is opened and closed.

PROVEN BY THEIR RECORD



Leading manufacturers all over the country choose Carris reels and continue to do so, due to their record. They're all plywood, light and strong, and moisture resistant. Custom-built to your particular requirements, they're produced by straight-line methods, assuring economical costs and quick delivery. Let us quote on your requirements. Write us today!

SAY "CARRIS" BECAUSE

- √ THEY'RE ALL PLYWOOD
- √ THEY'RE QUALITY-CONTROLLED
- √ THEY'RE MADE BY VERMONT CRAFTSMEN
- √ THEY'RE DEPENDABLE & ECONOMICAL
- √ THEY'RE STRONG AS VERMONT'S GRANITE HILLS

CARRIS

RETURNABLE ▪ NON-RETURNABLE

PLYWOOD REELS AND SPOOLS

70 PARK ST. RUTLAND, VT.

Tel. PRospect 3-7388

Packing Process

Adoption of the corrugated box packaging method has permitted the employment of a highly efficient mechanized packing method, based on continuous flow of standardized, rectangular boxes. The process starts with receipt of the boxes from the manufacturer, folded flat to take up minimum space in storage.

★ ★ ★

Packing of the large heavy duty boxes begins at the assembly machine, where a worker opens up the box and staples the bottom shut, using an average of 14 staples. A liner which doubles the thickness of the side walls is then inserted and the completed box sent along to the next station via a conveyor. Box construction is simple and rapid; a single worker does all the stitching and assembling for the entire plant.

★ ★ ★

At the second station, the loading machine, boxes are filled to exact weight with the correct size nail. A number of loading machines are used, set for the correct weights; the appropriate size nails are fed into them as required. For best packing, the nails fall a distance of 18 inches from machine into the box. While being filled, the box is supported on the bottom and sides, so that the nails dropping into it cannot puncture the walls.

★ ★ ★

Filled boxes move by conveyor to a "shaker" machine, which agitates them violently to settle the nails more compactly. Workers then glue the tops shut, and invert the boxes to speed sealing. Finally, the heavy duty boxes are stacked on pallets and moved to storage space to await shipment.

★ ★ ★

The smaller boxes which package retail quantities are assembled and filled in a similar fashion. Weighing devices give accurate control of the smaller package weights. After the shaking station, the tops of the small boxes are tucked in, and the boxes are packed into 50-pound master units.

BETTER WORKING CONDITIONS

FASTER BUTT WELDING

FASTER ACID NEUTRALIZING

LONGER STORAGE SAFETY

YOU GET THEM ALL WITH

BORAX 5 MOL.

RUST INHIBITOR COATING

LONGER DIE LIFE

...and ONE DIP is all that is necessary for coating steel rods

BORAX 5 MOL offers worthwhile advantages over regular borax as a satisfactory coating material on ferrous rods and wire in preparation for dry drawing. This newer material offers a higher concentration of sodium borate and therefore savings may be realized through reduced transportation, handling, and storage costs. Only about three-fourths as much Borax 5 Mol need be used to equal regular borax... yet you get the same worthwhile results!

WRITE FOR YOUR COPY OF NEW SERVICE BULLETIN

PACIFIC COAST BORAX CO.

DIVISION OF BORAX CONSOLIDATED, LIMITED

NEW YORK • CHICAGO
LOS ANGELES • CLEVELAND
PHILADELPHIA

MANUFACTURERS OF FAMOUS "20 MULE TEAM" PACKAGE PRODUCTS

These masters are glued shut and palletized for shipment.

Better Package, Lower Cost

The record of these corrugated boxes has been outstanding. Not only do they significantly contribute to lower packing expenses and shipping costs, but they provide a package far superior to the old nail keg or any other container.

★ ★ ★

"In spite of the high unit weight of the nails and their damaging shape," comments **M. F. Ziehm,** the nail concern's plant manager, "our heavy duty boxes have successfully passed numerous drop tests, and have met all railroad shipping requirements. They have cost us less than nail kegs and they take up 30% less space. We have nothing to fear from damage in transit. Using these boxes, we have never had a case of carton failure yet."

★ ★ ★

The company's development of a new, money-saving package method was based on the application of basic principles of packaging. These principles can be applied to any kind of packaging operation, with equally important results.

★ ★ ★

The new method of packaging nails has produced results: greater efficiency, greater mechanization, higher sales, and a better competitive position.

Precision Spring Manufacturer Employing Electronic Controls

(*Continued from page* 778)

When the springs return to Connecticut Spring's plant, the five check points are tested again for load values and for squareness.

★ ★ ★

Because so much is involved in the Hamilton-Standard spring's performance, the springmaker has made its inspection standards as tough as possible. That can mean a high rejection rate, which is accepted as the price of quality. Even though high rejection can be justified on this particular job, Connecticut Spring constantly strives to reduce it by using only top quality wire and then measuring its quality through its preproduction testing.

★ ★ ★

"We've been doing business with Johnson Steel & Wire ever since we started," says Mr. Torda, "and our experience with them has been satisfactory in every respect."

★ ★ ★

The Hamilton-Standard spring is large enough not to require use of electronics in its production. One job that does, however, is a computer spring with reduced ends and an O.D. of .032. Free length is plus or minus .002. Ninety-seven of them can be placed on a dime with plenty of room to spare.

★ ★ ★

An electronic device scans each spring as it emerges from a Torrington W-100 coiler. In a split-second the scanner checks to determine if the spring's dimensions are correct. If they aren't, the device causes the spring to be ejected into the scrap pile and then brings the coiler back into adjustment.

★ ★ ★

In the other electronic installation, springs can be cut without stopping the coiling action. The two installations are among the very few of their type used in the industry today.

Pioneers of the Past Washburn-Moen-Rice

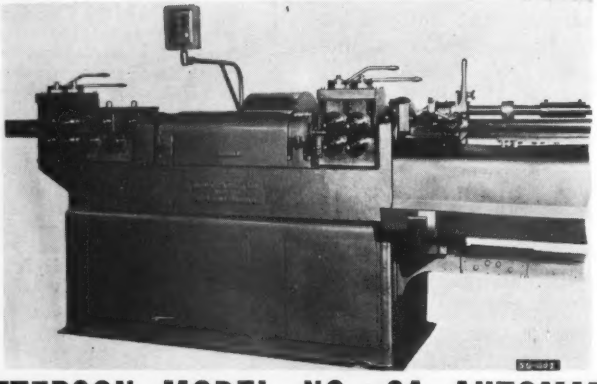
(*Continued from page* 780)

principal factor in the Quinsigamond Iron and Wire Works, Ichabod Washburn was still the dominating power in both that and the Grove Street Works, or I. Washburn & Moen Wire Works.

★ ★ ★

About this time Washburn suggested a union of the two companies. This was carried forward January 24, 1868, by incorporating the Washburn & Moen Manufac-

REELS **HI-HATS**



PATTERSON MODEL NO. 9A AUTOMATIC WIRE STRAIGHTENING & CUTTING MACHINE

Variable Drive • Wichita Air Tube Clutch • Air Brake, Electric Trip • Two 4-Roll Feed Housings for Those Big Coils • Pendant Control Switch • End Pull-Through Device

MODERN DESIGN IN A MACHINE THAT IS VERSATILE. Handles wire from ¼" to ½" Diam. in 3" to 50' lengths.

Have you seen our Model No. 2A—1/16" to ¼" range?

GEO. C. PATTERSON MACHINE CO.

3409 TRUMBULL ST. • CLEVELAND 15, OHIO

Write for information on your requirements.

CUT
Die Room
COSTS
50%
with the New type "M"

DYKREX
"IT CORRECTS THE DIE"

automatic Polishing Machine

Double your finished Tungsten Carbide Die production

•

Save ½ labor costs—

•

The new automatic polisher with the Time Switch—

•

It is completely assembled—just plug it in!

ROOS TOOL & MFG. DIVISION
Dykrex Corporation of America
manufacturers of
Wire Die Finishing Machinery

33 Bloomfield Avenue
Newark 4, N. J.

Western Union
Teletype Service
QAB-WUX—Montclair, N. J.

The Standard of the Wire Industry

turing Company with a capital stock of $1,000,000. The first officers were Ichabod Washburn, president; Philip L. Moen, vice-president; and William E. Rice, treasurer.

★ ★ ★

The arrangements for the purchase and installation of the Bedson mill were completed, but Mr. Washburn never saw the new mill in operation, as he died of a lingering illness December 30, 1868. Philip L. Moen immediately succeeded to the office of president of the Washburn & Moen Manufacturing Co. Rice remained as a director and treasurer until 1877, when he started a wire mill known as the **Worcester Wire Co.** This concern with Rice as president, operated a separate company until 1899, when it was purchased by American Steel & Wire.

★ ★ ★

In April, 1891, Philip L. Moen died. The personal regard in which he was held by employees was evidenced by the outpouring of men on the day of the funeral. Never before had Worcester witnessed an equal demonstration of affection for a deceased employer by the rank and file of his workers.

★ ★ ★

Shortly after the death of Philip Moen, his son, representing the Moen family and other heavy stockholders, invited Mr. Rice to become president of the Washburn & Moen Manufacturing Company to succeed his late father. Mr. Rice, himself a heavy stockholder, accepted the call and was elected to the office of president. This office he held until 1899, when the American Steel & Wire Company, purchasing all of the stock in both corporations, took over the business of the Washburn & Moen Manufacturing Company and also the Worcester Wire Company.

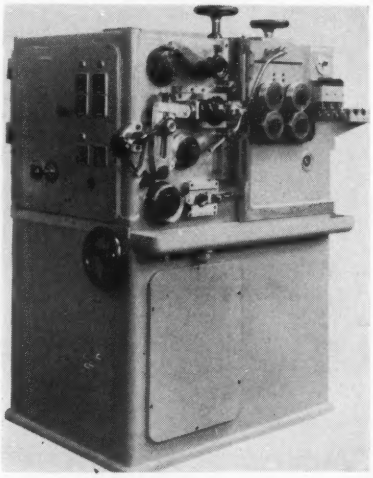
★ ★ ★

The successful conclusion of negotiations with the American Steel & Wire Company permitted Rice to withdraw from active business and enjoy a retirement to which he had long looked forward. He died 20 years later at the age of 86.

★ ★ ★

For the Era of

AUTOMATION...



Universal and Single Purpose

SCHENKER

SPRING COILING MACHINES

- **Positive, Infinitely Variable Adjustment of Feed during Coiling**
- **Electrically Operated Controls**
- **Readily Integrated in Automated Lines**
- **No Change Gears**
- **Variable Speed Motor Drive**
- **Reduced Floor Space**

SOLE DISTRIBUTOR FOR THE U. S. A. AND MEXICO:

GEORGE ALEXANDER ZAHAROFF
Industrial Consultant
385 FIFTH AVENUE
NEW YORK 16, N. Y.

VINYLS for...

CRITICAL CUSTOMERS

For the past ten years we have specialized in the compounding of Vinyl extrusion and injection molding compounds to specifications, or developing compounds for a specific use.

Underwriters' approved standard compounds are available in all colors for POT, T, TW, 80 Degree C, 90 Degree C and 105 Degree C wires. We also have a compound which will meet requirements of Military Specifications MIL-W-5086.

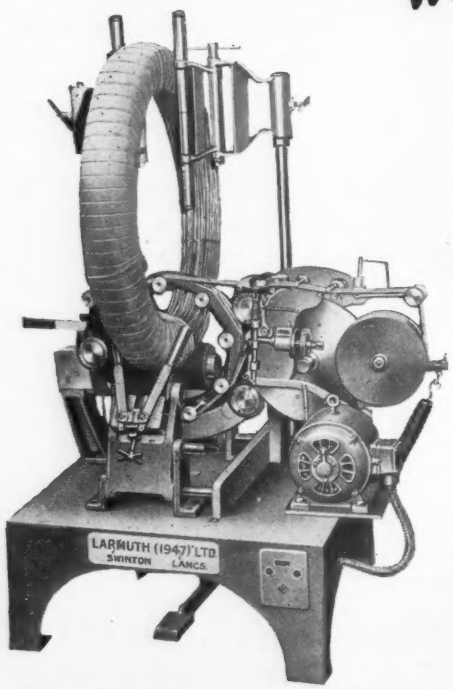
If you require a Vinyl compound rated higher than 105 degrees C for special applications, we suggest you communicate with us, as we may have a compound to meet your requirements.

Your inquiries are invited.

ELECTRONIC RUBBER COMPANY

69 Sunnyside Ave. • Stamford, Conn.

LARMUTH *Spiral Wrapping* MACHINES



are built to finest British engineering standards and are in use throughout the world for spiral wrapping of Motor Tyres, coils of Wire, Strip, etc., from 3" bore upwards. Also straight length Tubes, Bars, Rods, etc.

"BOUND" to get there safely.

Please send detailed dimensions of your products.

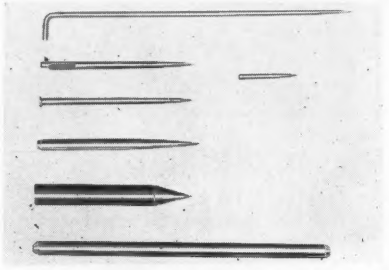
LARMUTH *of England*

LARMUTH (1947) LTD., EAST LANCASHIRE ROAD, SWINTON, MANCHESTER, ENGLAND.
Telephone: Swinton 1015

And so we are provided with a brief look into the lives of two more pioneers of the past . . . pioneers whose ambition and ability have helped lay the firm foundation upon which American Steel & Wire stands today.

New Production Equipment for Pointing Wire Announced

Robert A. Main & Sons, Inc., 271 Pascack Road, Paramus, New Jersey, announce that due to their new production equipment they are able to produce needle and



Types of pointing done by Main.

blunt pointed wires of long and short taper, made of all types of metals, at a lower per unit cost.

★ ★ ★

Such wires can have secondary operations of heading, flattening, bending, folding, chamferring, etc., as in the above photograph. Large and small diameter wires can be pointed, heat treated and polished, if required.

Timken Appointments

A. M. Donze, vice president of production of the **Timken Roller Bearing Company,** Canton, Ohio, has announced the appointments of **James Freese** as general production manager of all plants, and **Charles L. Richey,** assistant general production manager.

★ ★ ★

Mr. Freese started with the company in October, 1929, as a production clerk. In 1937 he was promoted to assistant production manager of the steel and tube division, and in 1942 to the position of manager of production of the steel and tube division. In 1953, Mr. Freese was named assistant general pro-

duction manager of all plants, which post he held until his recent appointment as general production manager. He succeeds **James Reid,** retired.

Texas Wire Company Expands

The Clark Wire and Supply Corp., Houston, Texas, has announced the acquisition of acreage at 13000 Almeda Road on the south side of the city for further expansion.

★ ★ ★

Established in 1949, the company has expanded several times and now has 6 wire drawing machines and 57 wire weaving looms for its manufacture of insect netting. **Phil Scolink** heads the concern, which now has over 60 employees and had sales totalling more than a million and a half dollars last year.

Canada's Wire and Cable Industry Flourishing

Three of Canada's largest electric wire and cable operators have plans for major expansions. They are **Canada Wire & Cable,** who will build an enamelled wire plant at Simcoe, Ont.; **Pirelli Cables, Conduits, Ltd.** who plans a copper rolling mill to feed its new $2 million cable plant at St. Johns, Que.; and **Phillips** of Brockville. It will add a $5 million expansion to the $3 million program completed last year.

★ ★ ★

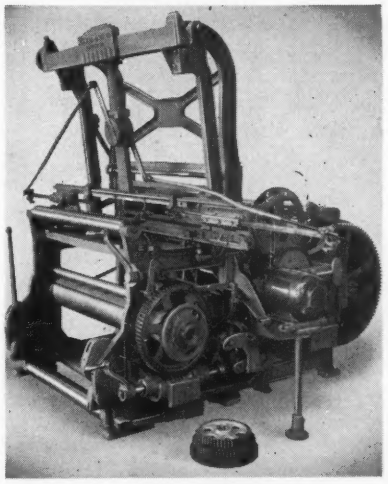
These plans reflect an industry for which prospects are bright. Canada's electrification is going hand in hand with industrial expansion, paralleling the growth of the Canadian economy.

★ ★ ★

The wire and cable industry's sales for 1956 should be above 1955, when they rose 17% over 1954 and reached $144 million-plus. So far the industry has been getting orders at a rate 10% above last year. Deliveries are now running on a 3 to 5 month basis.

TO SELL—ADVERTISE IN
WIRE AND WIRE PRODUCTS
It pays—send for rates
453 Main St., Stamford, Conn.

MODERN, EFFICIENT LOOMS for Making WIRE FLY SCREENS



TYPE No. 239
Made in 36″ and 48″ widths:
(Shown at right)

TYPE No. 239-360
Made in 60″ and 72″ widths:

These larger looms have stronger frames and heavier construction throughout.

The take-up and screen tension of the 60″ and 72″ widths, is effected through a ratchet, instead of the usual worm gear and weight arrangement.

Speed changes of the loom are made by changing different sizes of the motor drive pinions.

On the 48″ width and wider, extension slides are provided to support and guide the longer shuttle bars.

Steel shell warp drums are used.

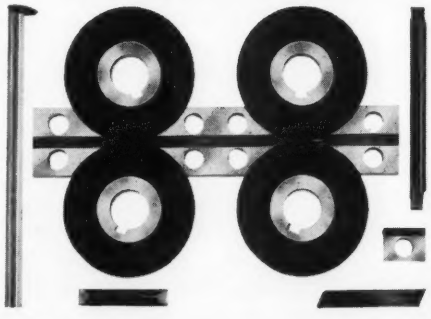
All looms are provided with an electric stop, which instantly stops the machine when either a warp or a cross wire breaks. All looms are motor driven.

We also make four heavier types.

write for details on this or other type looms you may need

MUMMERT-DIXON CO.
HANOVER 3, PENNSYLVANIA

CRAFTS ... for LONGER LIFE



Spring coiling machine tools made of tungsten carbide will outlast steel — but unless the grooves FIT your wire ALL AROUND — you are *not* getting *maximum* life.

CRAFTS Carbide Tools are optically ground in special equipment of exclusive design. Grooves are *guaranteed* round and to size . . . to give *complete* support and uniform wear for longest life.

Depend on **CRAFTS** Tools for better springs . . . a quality name since 1928.

MAIL COUPON TODAY
for Complete Information and Price List on the CRAFTS *line*

Arthur A. CRAFTS Company
601 Newbury Street
Boston, Mass.
CHICAGO DETROIT PHILADELPHIA BRISTOL, CONN.

Arthur A. CRAFTS Company, Inc.
601 Newbury Street, Boston, Mass.

Gentlemen:
Please send me complete information and Price List on CRAFTS Tools.

Name_____
Firm_____
Address_____
_____

PROBLEMS OF SUPPLY?

HIGH QUALITY

WOVEN WIRE FABRICS

We offer the following as a special:

13 Rolls Brass 80/20% Wire Cloth, 8 x 8 mesh, .035" diam. of wire, width 24", with two selvedges, each roll 107 running feet.

Price $0.56 per square foot, f.o.b. warehouse, San Francisco

NEUWALZWERK AKTIENGESELLSCHAFT

Bosperde I/Westf. (West Germany)

Est. 1827

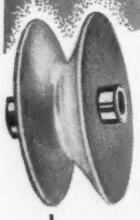
EXCLUSIVE IMPORTER FOR U. S.

JAMES S. BAKER (IMPORTS) CO. INC.

311 California St.

San Francisco 4, California

Use HEANIUM®



the NEW material that withstands hi-speed pressure of wire by the tons

HEANIUM®

IS THE BEST GUIDE . . . TO LOW COSTS.

If guide wear is a problem in your mill . . .

try HEANIUM®

HEANY INDUSTRIAL CERAMIC CORP.

NEW HAVEN 3, CONNECTICUT

New Electric Wire Plant in Canada

Canada Wire & Cable Company, subsidiary of Noranda Mines, has selected Simcoe, Ont. as the locale of a modern enamelled-wire plant on a 15-acre site, according to **O. W. Titus,** vice-president and general manager.

★ ★ ★

Designed to employ about 100 workers, the Simcoe plant will have a floor area of nearly four acres.

★ ★ ★

Canada Wire has a wire plant in Toronto, a copper rod mill in Montreal, an electric wire and cable plant at Vancouver, a wire rope plant at Smiths Falls and is building a new plant near Winnipeg.

Steel Company of Canada to Expand

The Steel Company of Canada, Ltd. has purchased 50 acres of industrial property in the western section of Brantford, 30 miles west of Hamilton. The Company is planning new works for Brantford, where its plant was established early in the century.

★ ★ ★

The present Brantford plant was expanded in 1947 and occupies an important place in the supply of bolts, lockwashers and associated products to growing markets in Canada.

★ ★ ★

Company studies indicate that further substantial growth in the market for these products can be expected. The present site is not suitable for the development foreseen and the company decided to purchase enough land to provide for long-term growth.

New Molten Salt Pump Developed

An air-driven molten salt pump, designed especially for pumping molten salts and metals, is described in Bulletin No. 800. The advantages of an air-driven motor for operation under high ambient temperatures are discussed, and typical uses for the pump, such as emptying large aluminum heat-

QUALITY

You'll find proof of this in every "CAREW" Cutting Nipper. Since 1863 every "CAREW" has been the product of superior materials and painstaking workmanship. Intrinsic QUALITY underlies the overall efficiency, operating ease, and production economies you get with every "CAREW" Cutter.

STOCKED BY YOUR LOCAL MILL SUPPLY DEALER.

M. W. ROBINSON CO., INC.

ROCKFALL, CONN.

DIAMOND POWDERS

OF FIRST QUALITY ONLY

For assured quality, accurately graded diamond powders

Specify

"DANFORTH"

They will cost more than "bargain basement" powders, but will finish your dies more economically.

RECLAIMING SERVICE

We will take your waste materials and reclaim the diamond content for you, guaranteeing that it will be 99% or better pure. When returned, it will be properly graded for further use.

Ask for prices and information on our processes.

C. W. DANFORTH CO.

P. O. Box 448, Youngstown, Ohio

Established in 1912

WHAT IS YOUR
TEST PROBLEM?
Continuity • Dielectric
Sparking • AC Voltage • Corona
Level Test • DC HV Tests
Continuous Production Testing
FOR ALL ELECTRICAL TESTS
ON WIRE AND CABLE SPECIFY
PESCHEL TEST SETS
For short lengths or full reels
to meet all standards:
IPCEA • NEMA • MIL • JAN
ASTM • USAF • All others
A Partial List of Our Customers:
American Insul. Wire; Ansonia Wire and Cable; Essex Wire; General Cable; General Electric; Hitemp Wires Inc.; Hudson Wire; Kerite Co.; Tensolite Insulated Wire; U.S. Rubber; U.S. Steel; Viking Wire; Warren Wire; Westinghouse; Wm. Brand Co.
Write, Wire or Phone for Test Equip. Catalog
PESCHEL ELECTRONICS, INC.,
13 Garden St., New Rochelle, N. Y.

—FOR BETTER—
PRODUCTION
NATIONAL OFFERS YOU
THREE SERVICES
- DIAMOND POWDER RECLAMATION — Exclusive process that gives maximum recovery. Send us your old cotton, die washings, worn wheels and sludge. High salvage percentages will pay you well.
- DIAMOND POWDERS—Complete line of graded quality powders for all lapping and finishing operations on wire drawing dies. First grades only.
- DIAMOND GRINDING WHEELS—A complete line of top-quality wheels for industrial production.

Write for prices.
NATIONAL RESEARCH COMPANY
25530 LITTLE MACK AVE.
ST. CLAIR SHORES, MICH.

treating furnaces, are listed. Photo, sketch, and performance data are included. For a copy of the bulletin, write to **Ajax Electric Company**, 988 Frankford Avenue, Philadelphia 23, Pa.

Dozen Wire Types Described in New Bulletin

A new bulletin has been issued by the **Webb Wire Division** of **The Carpenter Steel Co.**, New Brunswick, N. J., describing a variety of types of stainless steel wire. It includes the analyses, tensile strengths, physical properties and gauges of 12 types of stainless wire most generally used in the manufacture of wire products. Specifications for all of the wire types are given in easy-to-read chart form. Each of the wire grades covered is described in terms of distinctive characteristics and suggested end use. The entire grouping is broken down into austenitic, martensitic and ferritic classifications.

National Electrical Week Scheduled for February in 1957

National Electrical Week, promoted this year for the first time as an all-industry event, will be observed in 1957 from February 10 to 16, according to an announcement made by **M. E. Skinner,** Chairman of the National Electrical Week Committee. Mr. Skinner is vice president of the Union Electric Company of Missouri.

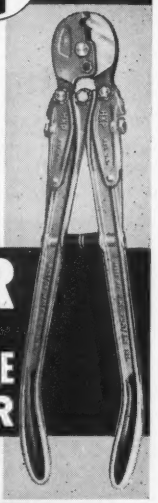
★ ★ ★

The "Week" will be observed annually in the future during the birthday anniversary week of Thomas A. Edison, who typifies the early pioneers of the electrical industry, to provide to all segments of the industry a concerted 7-day period in which to focus the attention of their own employees and the public on the importance of electricity and electrically operated equipment to the American way of life.

★ ★ ★

A promotional tool to be developed and made available by the Committee this year ahead of the 1957 observance will be a guide book designed to assist all branches

SAVE ON FREIGHT
AND ASSEMBLY COSTS
ALL SIZES OF
REELS
for
WIRE ROPE
and
INSULATED WIRE AND CABLE
LIGHT WEIGHT WAREHOUSE REELS
and
REGULAR PRODUCTION REELS
Let us show you
HOW to SAVE
on your assembly time!
MUNCY VALLEY
INDUSTRIES, INC.
MUNCY VALLEY, PA.
Telephone: Muncy Valley 2131

ANOTHER HKP® LEADER
CLEAN CUTTING
SHEAR ACTION
Cut coarse or fine stranded material cleanly with this Porter Notched Shear Cable Cutter. No crushing or deforming of cable. Capacity — up to ¾" cable and wire rope.

PORTER
Notched Shear
STEEL CABLE
CUTTER
— FOR CUTTING
RODS Ask for —

PORTER Center-Cut
CUTTERS
For general cutting of soft or medium hard rods, up to ⅝" diameter. Porter No. 4CCRE Round Edge Center Cut Cutter for cutting hard rods up to ½" diameter.
Order from your supplier or write direct to
H. K. PORTER, INC. Somerville 43, Mass.

REELS and SPOOLS

ALL SIZES

WOOD - PLYWOOD - WOOD - METAL

RETURNABLE • TO ORDER • NON-RETURNABLE

Samples and Prices on Request

DURKEE MFG. CO., INC. PINE RIVER, MINN.

MUSIC WIRE and SPECIAL WIRES

Music Wire for Industrial Purposes
211 sizes Bright Polished, .0015" to .3437"
45 sizes Bright Tinned, .003" to .125"
Aluminum—Annealed—Belt Lacing—Brass, Soft and Spring—Copper, Bare and Tinned
Coppered Steel Spring—Galvanized—Tinned
Monel—Nickel Silver—Pure Soft Nickel—Oil Tempered, Steel Spring, Black Finish
Phosphor Bronze, Spring Temper—Pure Iron Wire—Resistance Wire,
Hoskins Chromel "A"—Stainless, Soft and Spring Temper—Tag Wire, 1000
in an Envelope—Florist Wire—Spooled and Coiled, ¼-½-1-5#
Wires Straightened and Cut to length—Small Gauges—Small orders our specialty
Wires and Strands for the fishermen. Trolling Wires, Copper-Monel-Stainless.
Leader Wires, "Wilstabrite" Stainless and "Silverbrite" Music.

THE MALIN & COMPANY

2514 Vestry Ave. Established in 1884 Cleveland 13, Ohio

BARE ELECTRICAL TINSEL CONDUCTOR for Telephone • Razor • Hearing Aid Cords

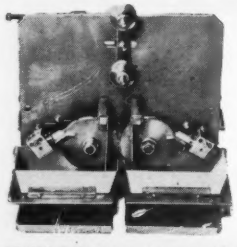
Silver Coated Copper Wire
Round for Kel-F & Teflon Insulated Radio and Instrument
Hook-up Wire and UHF Cables.
Flat for Tinsel Ribbons and Tinsel Garlands.

NEVA-TARN—Metallic Yarns—Including Laminated "MYLAR" for knitted and woven fabrics
Novelty Yarns — All Constructions

THE MONTGOMERY COMPANY

Est. 1871
25 CANAL STREET Tel.: National 3-3338 WINDSOR LOCKS, CONN.

MARKING WHEELS and MACHINES for ELECTRIC WIRE



Gillies Engraved Concave Wheels are widely used for printing on rubber or plastic coated wire, for code or manufacturer identification. Machines print on ONE or BOTH SIDES in large legible letters. Wheels adaptable to any machine or we will supply machines. Wheels, shafts, ink pans and all accessories readily removable for quick and easy cleaning. Wheels made of hardened tool steel.

Send for samples of wire and prices on wheels and equipment

DUNCAN M. GILLIES CO., INC. Post Office Box 181 WEST BOYLSTON, MASS.

Telephone: West Boylston TE 5-4445

of the industry to take full advantage of the opportunity offered by the "Week" to "sell" to the nation at large the value of their products and services, electrical safety, new developments and their plant operations.

Vaughn Machinery Celebrates Century of Progress

(*Continued from page* 782)

signed his first wire-drawing frame.

★ ★ ★

Today, the firm's facilities are devoted exclusively to the development and manufacture of cold-drawing machinery and related auxiliary equipment, such as: drawbenches for bars, tubes and shapes; Motobloc for single drawing operations; Motoblox for multiple drawing operations; Ringblox for drawing fine wire; cone type and heavy tandem continuous drawing machines; take-up frames, scalping machines, spoolers, pointers, die stringers, reels, spiders, scrap bundlers, and other related equipment.

★ ★ ★

Vaughn equipment is used in North and South America, Europe, Asia, Africa and Australia. To paraphrase a familiar quotation, "It can be truly said that the sun never sets on Vaughn machinery in operation."

★ ★ ★

This century of service to industry was not achieved lightly. Quality and integrity are built into each piece of equipment produced; every operation in the modern plant of The Vaughn Machinery Company is carefully checked, from inspection of the raw materials to the operating checks run before shipment. Each operation is one of precision, performed by trained craftsmen using modern facilities, including the inspections for the close tolerances specified by Vaughn engineers.

★ ★ ★

The Vaughn Machinery Company is proud of its heritage of a century of service, its four generations of Vaughns who brought the firm to today's success, and its fine reputation for giving an added measure of safety, extra-heavy de-

sign, prompt, efficient service to all its many customers the world over, its good name in business and its friendly relations with its faithful employees, many of whom have been with the firm more than twenty-five years.

★ ★ ★

Top management of the company includes **Leland A. Vaughn,** Chairman of the Board; **James A. Vaughn,** President and General Manager; **Gordon C. Vaughn,** Vice President, Manufacturing; **Eugene Daugherty,** Vice President, Sales; **Allan Vaughn,** Secretary; **J. E. Spearman,** Assistant to the President and **M. A. Nye,** Chief Engineer.

New Fenn Rolling Mill Catalog

The Fenn Manufacturing Company, leading producer of metal forming equipment, has published the 1956 edition of "Fenn Rolling Mills." The catalog contains complete information on Fenn's standard line for rolling ferrous and nonferrous metals in the form of sheets, strips, wire or rods. Included are two high and four high pinion drive; two and four high square gear drive; tandem mills; wire shaping mills; turks heads; and accessories. A notable new addition is the Lab Rolling Mill engineered especially for metallurgical and research laboratories in industry and colleges.

★ ★ ★

Copies of "Fenn Rolling Mills" may be obtained by writing to **A. T. Scattergood,** Vice President, The Fenn Manufacturing Co., Newington, Conn.

Wire Forming Facilities Featured in New Brochure

A new, 2-color, 4-page, 8½" x 11" brochure entitled "Wire Forming Specialists" is offered by **The Risdon Manufacturing Co.,** Naugatuck, Conn. Text and illustrations describe the company's ability and facilities for pointing, forming, stamping and finishing of products and components made from .015" to .250" diameter wire.

★ ★ ★

In addition to picturing a variety of formed wire products produced by the company, the brochure shows pointing, threading and

Cut Your Product Cost . . .
Stop struggling with wire worries. There's a Continental wire to help cut products costs — to add sales appeal. Let us know about your problem . . . Let Continental's helpful wire service work for you.
CONTINENTAL STEEL CORP.
STEEL
CONTINENTAL
WIRE
KOKOMO, IND.

*Trade Mark Reg. U. S. Pat. Off.

CONTINENTAL STEEL

CONTINENTAL STEEL CORPORATION

GENERAL OFFICES • KOKOMO, INDIANA

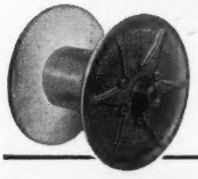
PRODUCERS OF Manufacturer's Wire in many sizes, shapes, tempers and finishes, including Galvanized. KOKOTE, Flame-Sealed, Coppered, Tinned, Annealed, Liquor Finished, Bright, Lead Coated, and special wire. ALSO, Coated and Uncoated Steel Sheets, Nails, Continental Chain Link Fence, and other products.

MILTON MACHINE

RUGGED in design . . . DEPENDABLE in service!

Save on replacement and maintenance!

RUGGED STEEL HEAVY DUTY PROCESSING REELS



Having trouble with light weight reels failing in heavy duty service? Send us a sketch or print stating the limiting dimensions and service required, we'll be glad to tell you about our facilities for supplying the wire rope and cable industry with special heavy duty processing reels, spools or bobbins. WRITE FOR BULLETIN 52-W.

MILTON MACHINE WORKS, Inc.
DESIGNERS — ENGINEERS — MANUFACTURERS
MILTON • PENNA.

NEBUTTCO

MACHINERY FOR HIGH SPEED PRODUCTION

BRAIDERS • CABLERS • TAKE-UPS
BUNCHERS • STRANDERS • TAPING MACHINES

NEW ENGLAND BUTT COMPANY
DIVISION WANSKUCK COMPANY
304 PEARL STREET • PROVIDENCE 7, R. I.
JAMES DAY (MACHINERY) LTD. • 28 MADDOX STREET • LONDON W1, ENGLAND

DIAMOND POWDER

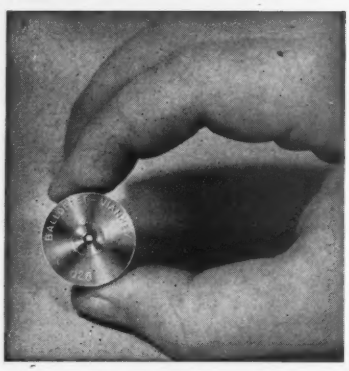
Virgin or Reclaimed — All sizes

Finest Diamond Salvage Services Available

▼ ▼ ▼

INDUSTRIAL DIAMOND POWDERS, INC.
Box 10602, Pittsburgh 35, Pa.
Telephone: SYcamore 3-3308

BALLOFFET VIANNEY WIRE DIE CO., Inc.



All sizes from .081" down to .0004" in stock from New York

Manufacturers of Quality diamond dies since 1870

BALLOFFET VIANNEY WIRE DIE CO., Inc.
6825 ADAMS ST., GUTTENBERG, N. J.
Tel: Union 3-3393

other wire end operations performed by Risdon. Also shown are examples of work produced on Risdon's strip metal stamping and drawing facilities. The brochure lists the various finishing processes employed and describes the Risdon technical assistance service available to customers and prospects.

★ ★ ★

Copies of this brochure may be obtained by writing on company letterhead to Risdon.

Low Alloy Automatic Welding Wire

Designated A-S-8620, this chrome-nickel-molybdenum alloy automatic welding wire with less than 2 per cent total alloy content, is "sympathetic" towards practically all low alloy. It is a standard AISI low alloy. If the base metal is of higher carbon, the carbon pick-up from dilution in the weld metal gives excellent wearing resistance and high elongation qualities to prevent cracking and spalling.

★ ★ ★

In its application as worked out by the **Page Steel and Wire Division, American Chain & Cable Co.,** Monessen, Pa., the formulation is particularly well suited for welding U. S. Steel's "T-1 Steel," an alloy with very high physical properties —tensile strength 105/130,000 psi.; elongation 15-20 per cent; and Rockwell C20-35.

★ ★ ★

With the proper flux (submerged arc) on T-1 steel, the welding wire gives a tensile strength of 114/116,-000 psi.; elongation of 12-15 per cent; a Rockwell of C28-30 and the chemical analysis as welded is very close in all elements to the parent T-1 steel. Face and root bends show 100 per cent efficiency and there is no "affected" zone.

★ ★ ★

The welding wire is packaged in 100 lb. coils, single paper wrapped, and in individual fiberboard cartons. Larger quantities are palletized for ease of shipment.

Pennsalt Expands Operations in Mexico

Pennsylvania Salt Manufacturing Co. has announced further expansion of its operations in the Republic of Mexico. Nearing completion at Navojoa, Sonora, is a new chemical processing plant that will provide an expansion of Pennsalt de Mexico's central plant and office facilities in Mexico City and establish a base for the distribution of the Company's chemicals for industrial and other uses in Mexico.

★ ★ ★

Operating abroad as **Pennsalt International Corp.,** Philadelphia, the Company also has exporting, importing, and manufacturing interests throughout Central and South America.

New Lubrication Guide Covers All Waterbury Farrel Machinery

A new lubrication guide offered by **The Waterbury Farrel Foundry & Machine Co.,** Waterbury, Conn., covers lubrication systems and requirements of all machinery built by WF's four divisions. Equipment covered includes: bolt, nut, screw

WEMCO MOLTEN METAL PUMP

Air Driven for Rapid Transfer of
ZINC
LEAD
ALUMINUM
TIN
THEIR ALLOYS
and
HEAT TREATING SALTS

WIRE EQUIPMENT MFG. CO., INC.
1168 So. Olden Ave.
Trenton 10, N. J.

EXPORT AGENTS:
FISHER ASSOCIATES
122 E. 42nd Street
New York 17, N. Y.

TUNGSTEN CARBIDE WIRE DRAWING DIES

DESIGNED FOR LONG LIFE AND MAXIMUM WIRE PRODUCTION

Furnished semi-finished to within .001" to .002" of finished size at rough-drilled die prices. Require only light sizing and polishing before using. Our dies embody special design features that make for superior performance.

Also, a full line of carbide tooling for the Cold Heading Industry

EASTERN CARBIDE CORPORATION
NEW ROCHELLE, N. Y.

and rivet machinery; power presses; wire, rod and tube machinery and rolling mill machinery.

★ ★ ★

The guide, extensively illustrated, explains in detail the following systems used singly or in combination on WF machines: circulation oiling, centralized pressure lubrication, bath-splash oiling, centralized gravity feed and hydraulic systems. Text describing each system is accompanied by photos of typical WF machines employing the particular system. The booklet also covers lubrication factors including: lubricant physical properties and reasons for use; effects of temperature, water, acids and air on lubricants; influence of lubricant condition on machine performance and oil changing schedules as determined by speeds, loads, type of motion and other operating conditions.

★ ★ ★

Additional information is given on pressure fittings, grease cups, oil cups, ring oiling and hand application of lubricants. A helpful chart listing lubricants recommended by Socony Mobil Oil Company for each system forms the guide's final section.

★ ★ ★

Free copies of this guide may be obtained by writing the Waterbury Farrel Foundry & Machine Company, Waterbury, Conn.

Catalog on Metalworking Machines

A new 44-page complete line catalog describing how Di-Acro Metalworking Machines perform a wide variety of forming, cutting, punching and notching operations in medium and light weight materials is available upon request from **O'Neil-Irwin Mfg. Company,** 635 Eighth Avenue, Lake City, Minn.

★ ★ ★

Features include photographic case histories of how numerous companies are applying "Die-Less Duplicating" techniques to their particular problems, photos and descriptions of new and improved products, a listing of accessories, and complete information on both

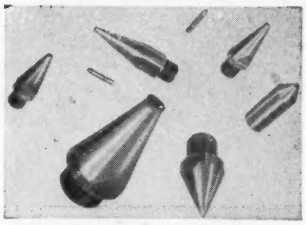
WAYNE WIRE DRAWING DIES

Quality in Diamonds + Perfection in Workmanship = Good Wire

Satisfactory DIAMOND DIES can only be made by those who have experience, skill and knowledge. WAYNE has all of these. Users have called WAYNE DIES "the best."

WAYNE WIRE DIE CO., 200 Pennsylvania Ave., Hillside, N. J. Telephone: Elizabeth 2-2456

Get High EXTRUSION PRODUCTION



Some types and sizes of Nozzles.

with CARBIDE NOZZLES

(made for all makes of *Extruders* for electric wire)

One major Electric Wire and Cable concern has produced over 40 MILLION FEET of electric wire with one of our NOZZLES.

Our nozzles will save you money!

You, too, can enjoy these savings. Write or call

WIRE TOOL DIVISION

BRIDGEPORT JIG BORING COMPANY

303 STRATFORD AVE., BRIDGEPORT, CONN. TEL.: FOREST 7-8473

UNION WIRE DIE CORP.

71 West 45th Street • New York 36, N. Y.

Main Plant: 375 Fairfield Ave., Stamford, Conn.

- DIAMOND DIES
- ROUND TUNGSTEN CARBIDE DIES
- SHAPE TUNGSTEN CARBIDE DIES
- HEADER DIES & MANDRELS
- CARBIDE SPECIALTIES
- DIAMOND POWDER
- UNILAP-TC DIAMOND COMPOUNDS
- INDUSTRIAL DIAMONDS
- DIAMOND RECLAMATION SERVICE
- DIE RECUTTING SERVICE
- DIE ROOM MACHINERY

UNIWIDIE

• • • Serving the wire drawing industry for 35 years as the ONLY manufacturer of ALL products and services for the die room.

WE BUY WE SELL

We Pay Highest Prices for Used Machinery

3—#105 UNIVERSAL COIL WINDING MACHINES, IN EXCELLENT CONDITION

All Machines Reconditioned in Our Own Shop

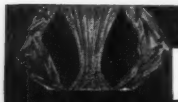
WIRE & TEXTILE MACHINERY INC.

P. O. BOX 436, PAWTUCKET, R. I.

DIAMOND
and
TUNGSTEN CARBIDE
DIES
for all WIRE DRAWING purposes.
SPECIALISTS IN DIE REPAIR WORK ON ALL TYPES OF DIES.
UNIVERSAL WIRE DIE CO.
951 Lincoln Ave., Cranford, N. J.
CRanford 6-0116

DIAMOND DIES .0006 - .120 DIAMOND POWDER
INDUSTRIAL AJAX SUPPLIES INC.
R.R. 4, P. O. Box 66, Fort Wayne, Ind.

NEW ENGLAND WIRE DIE CO.
7 Forsberg St., Worcester, Mass.
EXPERT RECUTTING
DIAMOND DIES, DIAMOND POWDERS
Eastern Representative of
Ajax Industrial Supplies, Inc.


DIAMOND DIES
PROFILED DIES
FINE SIZE DIES
VICTOR J. BOULIN INC.
10 FIRST STREET, PELHAM, N. Y.

DIAMOND POWDER
Diamond Reclaiming Services
FORT WAYNE DIAMOND PRODUCTS, Inc.
2623 E. Pontiac Fort Wayne 5, Indiana

DIAMOND WIRE DRAWING DIES
and DIAMOND POWDER
INDIANA WIRE DIE COMPANY
314-324 E. Wallace St., Fort Wayne, Indiana
Phone: Harrison 4373

DIAMOND POWDERS
Expert Reclaiming Service
MOLINA-STRAUS
DIAMOND PRODUCTS COMPANY
527 Fifth Ave., New York 17, N. Y.
Tel.: MUrray Hill 7-6825

the Di-Acro Engineering Service Offer and the Di-Acro Warranty Agreement.

★ ★ ★

Nine basic Di-Acro Machines — Benders, Brakes, Press Brakes, Notchers, Punch Presses, Rod Parters, Rollers, Shears and Spring Winders — are available in 45 sizes.

Reel Manufacturer Enlarges Plant

David J. Bolton of **William McCaskie, Inc.,** Forge Road, Westport, Mass., has announced that an 1800 square foot addition to their plant has been completed, enabling the company to give much improved service on reel deliveries. The company manufactures wood reels for wire and cable, using an all-glued construction. No nails are employed. The reels are accurately made of kiln-dried wood and are free from projections that might injure the wire, besides being said to be much stronger than conventional types.

Case History Bulletin on Carbide Dies

The Carboloy Dept. of General Electric Co., Detroit 32, Mich., has issued a bulletin giving the case histories on a drawing die that has drawn 5000 tons of steel bar stock and of a wire drawing die that has been resized 20 times and was still producing wire of high quality when finally retired.

★ ★ ★

The bulletin, entitled "Proof from Mill Records that . . ." is available to those who would like to have it, upon request to Carboloy.

AS&W's Cuyahoga Works Starts New Rod Mill

The new rod mill that has been installed in **American Steel and Wire's** Cuyahoga Works in Cleveland is now in operation.

★ ★ ★

This mill handles 1050 pound billets, 3¼ inches square by 30 feet long, replacing a mill that took 600 pound billets. Its annual capacity is rated at 450,000 tons of rod.

★ ★ ★

DIAMOND DIES
.000's to .102"
For many years . . .
Outstanding in quality,
workmanship and service.
FORT WAYNE WIRE DIE, INC.
2625 E. Pontiac St., Fort Wayne, Ind.

DIAMOND WIRE DRAWING DIES
DIAMOND POWDER AND COMPOUNDS
DIE RECUTTING SERVICE
CARBIDE DIES • TOOLS • PARTS
RUSCH WIRE DIE CORPORATION
CROTON-ON-HUDSON, N. Y.

DIAMOND DIES
mounted unmounted
For Precision Wire Drawing
BRENON, INC.
Experts in Fine Size Diamond Dies
R.F.D. #5, Box 400, New Brunswick, N. J.

WIRE BRIGHT TINNED
To Your Order
in Sizes .003" to .013"
STEEL • COPPER • BRONZE • BRASS
JURY'S WIRE PRODUCTS, INC.
24 Howard St. Bloomfield, N. J.

DIAMOND CARBIDE
DIES
KELLY
WIRE DIE CORPORATION
19 W. 34th St. New York

PITTSBURGH CARBIDE DIE CO.
NAIL GRIPPERS
Stock Delivery
Glader—National Machines
Monongahela, Penna. BLackburn 8-6959

STANDARD UNI-DRIVE WIRE WINDER
WILL INCREASE YOUR PRODUCTION
Write for details.
STANDARD MILL SUPPLY
31 ESTEN AVENUE, PAWTUCKET, R. I.

"NATDI"
A REVERSIBLE DIAMOND DIE
GREATER INITIAL PRODUCTION
MORE RECUTS — LONGER LIFE
NATIONAL WIRE DIE CO.
30 IRVING PLACE, NEW YORK 3, N. Y.

WF Wire Drawing Machinery

Continuous Drawing Machines For Heavy, Intermediate and Fine Sizes

High Speed Upright Cone Machines, Wire Rolling Machines, Spoolers, Coiners, Swagers, Pointers, String-up Machines, Coilers, Bull Blocks, etc.

Also: Wire Flattening Mills, Cold Heading Machinery, etc.

WATERBURY FARREL FOUNDRY & MACHINE CO.
Waterbury, Conn.

WOOD REELS and SPOOLS
American Woodworking Company
1" to 60" Diameters. Send $1.00 for our catalogue of all wood products made in the U.S.A.
1674 N. Lowell Avenue
Chicago 39, Illinois

Wire Measuring...
PRODUCTIMETERS
Send for Catalog No. 40
Precision-built for accuracy and speed. Most complete line offered.
DURANT MANUFACTURING CO.
1918 N. Buffum Street • Milwaukee 1, Wisconsin
118 S. Water St. • Providence 3, R. I.

MODEL T-3
TORSION TESTER FOR WIRE

SCOTT TESTERS INC. 55 BLACKSTONE ST. PROVIDENCE 1, R.I.

CLEVELAND TRAMRAIL
Division of
THE CLEVELAND CRANE & ENGINEERING CO.
WICKLIFFE, OHIO
Leading manufacturers of
OVERHEAD MATERIALS HANDLING EQUIPMENT
for the Wire and Wire Products Industry

LINE—GORCY
mechanical
wire rod descalers
FISHER ASSOCIATES
122 East 42nd St. New York 17, N. Y.

WOOD & PLYWOOD REELS
for WIRE ROPE and INSULATED WIRE & CABLE
THE NELSON COMPANY
Standard Oil Bldg., Baltimore 2, Md.

FOR THE BEST IN *Spiral Wrap*
SPECIFY *"Arksafe"*
ARKELL SAFETY BAG CO., 10 E. 40th St., N. Y. 16, N. Y.

CREPED PAPER
COIL OR BAR WRAPS
NATIONAL WATERPROOF PAPERS, INC.
BEVERLY 1, N. J.

ZINC WIRE
THE PLATT BROS. & CO.
Waterbury 20, CONN.

The new rod mill is expected to add to efficiency due to the larger bundle size and company officials say this will work out well, as many of AS&W's customers have handling equipment that can accommodate rod coils of this size.

★ ★ ★

In its own plant, the company has also installed larger billet and rod handling equipment and increased rod storage facilities in keeping with the larger anticipated production.

Pennsalt Announces $55 Million Expansion

The Pennsylvania Salt Manufacturing Company has announced expansion of chlor-caustic facilities at its Calvert City, Kentucky works as part of its $55 million growth program. "The new unit," President **William P. Drake** stated, "will increase chlorine production from 50 to 150 tons a day with accompanying increase of rayon grade caustic soda production. It is anticipated there will also be an increase in caustic potash production."

★ ★ ★

With preliminary engineering completed and construction scheduled to begin in the near future, the new unit will go into operation during 1957. It will utilize facilities and services incorporated in the existing plant which was completed in 1953. Under a licensing agreement with Monsanto, it will employ the newest type deNora cell.

WORLD'S LARGEST MANUFACTURER
SPIRAL WRAPPING MACHINES
For Coils or Straight Lengths
Terkelsen Machine Company
323 A Street, Boston 10

TOOLS TALIDE DIES
WEAR PARTS
Talide Metal, the super hard tungsten carbide gives increased production, better finish, less down time and scrap on all wire mill operations.
METAL CARBIDES CORPORATION
YOUNGSTOWN 5, OHIO

WIRE DRAWING MACHINERY AND EQUIPMENT
Rod Frames — 16" Frames, 8" Frames — Take-Up Frame, Wire — Pointers — Puller Tongs — General and heat resisting alloy castings for wire mill use.
Circulars on Request
E. J. SCUDDER FOUNDRY & MACHINE CO.
TRENTON, N. J.

STRAND-BUFFALO CORP.
No. Tonawanda, N. Y. (near Buffalo)
REELS
WOOD and PLYWOOD
Manufactured to Your Specifications

EMORY
SPOOLERS AND TRAVERSES
ROBERT J. EMORY CO.
31 E. RUNYON ST., NEWARK 5, N. J.

NEP · SUMFOAM
ACID INHIBITOR • PICKLING COMPOUND
THE PARKIN CHEMICAL CO.
HIGHLAND BLDG. PITTSBURGH 6, PA.

Superior Quality - Low Cost
WIRE DRAWING LUBRICANTS
Wet and Dry—All Metals
SIXTH STREET • ROME, N. Y.
Write to
ROME SOAP MFG. COMPANY

SLEEPER & HARTLEY, Inc.
Designers and Builders
SPRING COILERS
WIRE WORKING MACHINERY
WIRE MILL EQUIPMENT
SPECIAL MACHINERY
Address Inquiries to
Box 1249
WORCESTER, MASS.

Engineering and Professional Services

LANCASTER, ALLWINE & ROMMEL
REGISTERED PATENT ATTORNEYS
Suite 438, 815—15th St., N. W.
Washington 5, D. C.

●

Practice before U. S. Patent Office. Validity and Infringement Investigations and Opinions. Booklet and form "Evidence of Conception" forwarded upon request.

DESIGN ENGINEER

Medium size progressive wire plant requires the services of a first class design engineer to work with plant engineer. Design and supervise building of new equipment and repairing of present equipment.

BONUS AND PENSION
Box #866

WIRE AND WIRE PRODUCTS
453 Main St. Stamford, Conn.

WANTED
ALUMINUM WIRE PRODUCTS

Integrated Aluminum wire manufacturer wants to buy a company making products of Aluminum wire—will consider buying product only if company is not for sale. (No screen wire plants, please.)
Replies confidential—Brokers protected
Write Box 868

WIRE AND WIRE PRODUCTS
453 Main St. Stamford, Conn.

WANTED

Experienced shaped die man by die manufacturer in Western Connecticut, Metropolitan area. Write details to

Box 862
WIRE AND WIRE PRODUCTS
453 Main Street Stamford, Conn.

POSITION WANTED as Wire Mill Supt. Experienced in magnet, fine, medium, heavy, flat & square wire. Also have some insulating experience. Would like to relocate Sept. 1st. Write Box 864,
WIRE AND WIRE PRODUCTS
453 Main Street Stamford, Conn.

CONSULTING WIRE MILL ENGINEER
Specializing in Wire Mill Machinery, Plant Layout and Production Techniques.
CLARENCE S. ARMS
Sleeper & Hartley, Incorporated
P.O. Box 1249 • Worcester, Mass.

Immediately Available
WIRE WORKING MACHINERY

FOURSLIDES: Baird, Nilson & Manville, Nos. 0, 1, 2, 3, 4, 5, 3-20, 4-26
U. S. Tool Co. No. 22, 28, & 33 Multislides
Sleeper & Hartley Spring Coilers Nos. 0, 1, 2, 3, 3½, 4, & 5
Vaughn Nos. 8, 10, & 12 Moto-Blocs
Waterbury No. 3 Bull Blocks, Duplex
Morgan 4 stand Wire Drawer with pointer and 100 H.P. motor drive & motor
Waterbury Nos. 1, 2, & 3 Continuous Wire Drawing Machines

PARTIAL STOCK LISTING
"The most diversified stock of machinery in the country. If it's machinery we have it."

National Machinery Exchange
130 Mott St., New York 13, N. Y.
CAnal 6-2470

New High Temperature Glass Yarn Shown

A new coated yarn that is finding many uses in the electrical insulation field because of its high temperature resistance was shown in May at the Design Engineering Show by **L.O.F. Glass Fibers Co.** of Toledo, Ohio.

★ ★ ★

According to **Don W. Lyon,** sales manager of The Textile Div., a coating of duPont's Teflon is applied directly to the strands of glass during yarn fabrication. This coating prior to braiding allows each strand to get individual protection in addition to overall protection. Previously, he said, the glass strands were braided over wire before the coating was applied.

★ ★ ★

Among the uses for Teflon coated yarn Mr. Lyon mentioned were aircraft wiring applications, where cables have to be pulled through small and, often, rough openings. The new product, that has a feeling of being slippery and is much more abrasion resistant, readily pulls through these openings. Other wire uses are for Navy and coaxial cables.

WANTED

— ENGINEER —

NEW PROJECTS & MAINTENANCE

Established wire & cable manufacturer has opening for man thoroughly experienced all phases of copper wire drawing, annealing, tinning, stranding, extrusion. Permanent position with growth — Plant located in N. Y. Metropolitan area.

SALARY OPEN

Write fully: age, experience, qualifications, etc. Replies confidential — Our employees know of this ad.

Box 863

WIRE & WIRE PRODUCTS
453 Main St., Stamford, Conn.

FOR SALE

NILSON #S-O FOUR SLIDE WIRE FORMER. Vertical Former—Straightener—Reeves Drive. 1947. Excellent condition.

UNITED MACHINERY & TOOL CORP.
85 THOMAS STREET, WORCESTER, MASS.

FOR SALE

One Waterbury Farrel #3 Upright Intermediary wire Drawing Machine. Suitable for copper or brass wire in sizes range .180 to .051 Carrier Rolls—8" diameter, seven die machine, 16" block. $1500.00 F.O.B. Newark, New Jersey.

Write Box 867
WIRE AND WIRE PRODUCTS
453 Main St. Stamford, Conn.

Wire Products Production Manager

Manufacturer of formed and welded wire products located in Southern New England has excellent opportunity open for man thoroughly experienced in formed and welded wire products field. Reply in letter giving details of previous background and experience.

Reply Box 865

WIRE AND WIRE PRODUCTS
453 Main St. Stamford, Conn.

Index to Advertisers

A

Acrometal Products, Inc. 797
Ajax Industrial Supplies, Inc. 824
Ajax Manufacturing Co., The 757
Alloy Metal Wire Div., H. K. Porter Co., Inc. 784
American Chemical Paint Co. 787
American Insulating Machinery Company 796
American Pulley Company, The 747
American Woodworking Co. 825
Apco Mossberg Co. 791
Arkell Safety Bag Company 825
Arms, Clarence S. 826

B

Baird Machine Company, The 735
Baker (Imports) Co., Inc., James S. 818
Balloffet-Vianney Wire Die Co., Inc. 822
Boulin, Victor J., Inc. 824
Boyd & Sons Mfg. Company 810
Brenon, Inc. 824
Bridge Mfg. Co. 731

C

Camden Wire Co., Inc. 798
Carboloy Dept. of General Electric Co. 734
Carl Mayer Corp., The 811
Carris Reels 813
Carter & Company, Ltd., B. & F. 810
Chase Brass & Copper Co. 739
Chemical Products Corp. 789
Clark Manufacturing Co., J. L. 740
Cleveland Tramrail Division of The Cleveland Crane & Engineering Co. 825
Continental Can Company ..... Inside Front Cover
Continental Steel Corporation 821
Cook Mfg. Co. 804
Coulter & McKenzie Machine Co., Inc., The 767
Crafts, Arthur A., Co., Inc. 817

D

Danforth Co., C. W., The 818
Davis-Standard Sales Corp. ..... 744 B
Du Pont E., I. de Nemours Company (Inc.) 743
Durant Mfg. Co. 825
Durkee Mfg. Co., Inc. 820
Dykrex Corporation of America—Roos Tool & Mfg. Div. 815

E

Eastern Carbide Corp. 822
Edmands Company, The 812
Electric Furnace Company, The ..... Back Cover
Electronic Rubber Co. 816
Elgin National Watch Co., Abrasives Div. 773
Emory, Robert J. Company 825
Entwistle, James L. Co. 807
Entwistle Manufacturing Corp. 750

F

Fisher Associates 825
Fort Wayne Diamond Products, Inc. 824
Fort Wayne Wire Die, Inc. 824

G

Gillies Co., Inc., Duncan M. 820
Glader, Wm., Machine Works 793

H

Haskell-Dawes Machine Co. 811
Hauger-Beegle Associates, Inc. 812
Heany Industrial Ceramics Corp. 818
Herborn Maschinenfabrik ..... 748 & 749
Hubbard Spool Company 759

I

Indiana Wire Die Company 824
Industrial Diamond Powders, Inc. 821
Industrial Ovens, Inc. 826
Interlocking Fence Co. 800
International Fine Wire Co., Inc. 794

J

Jury's Wire Products, Inc. 824

K

Kelly Wire Die Corp. 824
Keystone Steel & Wire Co. 786

L

Lancaster, Allwine & Rommel 826
Larmuth (1947), Ltd. 816

M

Malin & Company, The 820
Maschinen & Stahl, A. G. - E. V. G. 736
Maschinenfabrik Niehaus, K. A. 809
Mason Can Company 795
Metal Carbides Corporation 825
Mettler Machine Tool, Inc. 744
Micro Products Company 783
Miller, R. H. Co., Inc. 762
Milton Machine Works, Inc. 821
Molina-Straus Diamond Products Co. 824
Monsanto Chemical Co., Plastics Division 745
Montgomery Co., The 820
Morgan Construction Company 732
Mossberg Pressed Steel Corp. 803
Mummert-Dixon Co. 817
Muncy Valley Industries, Inc. 819

N

National Machinery Exchange 826
National Research Co. 819
National Standard Co. 746
National Waterproof Papers, Inc. 825
National Wire Die Company 824
Naugatuck Chemical Div. of United States Rubber Co. ..... 752 & 753
Nelson, Co., The 825
New England Butt Co. 821
New England Wire Die Co. 824
New York Engineering Company 785
North Anson Reel Co. 737
Norton Company 805

P

Pacific Coast Borax Company 813
Parkin Chemical Co., The 825
Patterson, George C., Machine Co. 814
Peschel Electronics, Inc. 819
Pittsburgh Carbide Die Co. 824
Pittsburgh Plate Glass Co. 738
Platt Brothers & Co., The 825
Plymouth Cordage Company 808
Porter, H. K., Inc. 819
Prodex Corporation 806

R

Republic Steel Corp., Pressed Steel Div. 733
Robinson, M. W., Co., Inc. 818
Roebling's, John A. Sons, Corp. 744A
Rome Soap Mfg. Co. 825
Royle, John & Sons 802
Rusch Wire Die Corporation 824

S

Scott Testers, Inc. 825
Scudder, E. J., Foundry & Machine Co. 825
Shawinigan Resins Corp. 755
Sjogren Tool and Machine Co., Inc. 796
Sleeper & Hartley, Inc. 825
Standard Industrial Compounds Co., Inc. 729
Standard Mill Supply Co. 824
Strand-Buffalo Corp. 825
Syncro Machine Co. 754

T

Terkelsen Machine Company 825
Titan Metal Mfg. Co. 790
Torrington Mfg. Co., The 751

U

Union Wire Die Corp. 823
United Wire & Supply Corp. 788
Universal Wire Die Co. 824

V

Vascoloy-Ramet Corp. ..... 7?0
Vaughn Machinery Co., The ..... Front Cover

W

Wafios Maschinenfabrik 758
Wardwell Braiding Machine Co. 792
Waterbury Farrel Foundry & Machine Co. 825
Watson Machine Co., The ..... Inside Back Cover
Wayne Wire Die Co. 823
Whittaker Clark & Daniels, Inc. 799
Wilson, Lee, Engineering Co., Inc. 741
Wire Equipment Mfg. Co., Inc. 822
Wire & Textile Machinery, Inc. 823
Wire Tool Div., Bridgeport Jig Boring Co. 823

Y

Youngstown Sheet & Tube Co., The 730
Youngstown Welding & Engineering Co., The 801

Z

Zaharoff, George Alexander 815

WHERE TO BUY

For more complete information, consult the annual Wire and Wire Products Buyers' Guide.
Only advertisers who have contracted for six or more insertions are listed in this section.

ABRASIVES—
Elgin National Watch Co., Abrasives Div., Elgin, Ill.
Hyprez Div., Engis Equipment Co., Chicago, Ill.
Norton Co., Worcester, Mass.
United States Industrial Diamond Corp., New York, N. Y.

ACID INHIBITORS—
(See Inhibitors, Pickling)

ADJUSTABLE SPEED DRIVES
The Louis Allis Company, Milwaukee, Wisc.

ANNEALING MACHINES — Electric Resistance
Syncro Machine Co., Perth Amboy, N. J.

ANNEALING POTS AND BOXES—
Scudder, E. J. Fdry. & Mach. Co., Trenton, N. J.

BAKERS—
(See OVENS—Rod Bakers)

BOBBINS—Braider & Wire Weaving
Acrometal Products, Inc., Minneapolis, Minn.
Apco Mossberg Co., Attleboro, Mass.
Carter & Co., Ltd., B. & F., Bolton, England.
Milton Machine Works, Inc., Milton, Pa.
Mossberg Pressed Steel Corp., Attleboro, Mass.
Standard Mill Supply Co., Pawtucket, R. I.
Wardwell Braiding Machine Co., Central Falls, R. I.
Wire & Textile Mach'y, Inc. (used) Pawtucket. R. I.

BORAX—Wire Drawing
Pacific Coast Borax Co., New York, N. Y.

BORON CARBIDE—
Norton Co., Worcester, Mass.

CABLE FILLERS—Paper
Plymouth Cordage Company, Plymouth, Mass.

CAPSTANS—for Wire
Litzler, C.A., Co., Inc., Cleveland, Ohio.

CARRIERS—Braider, High Speed
Apco Mossberg Co., Attleboro, Mass.
Carter & Co., Ltd., B. & F., Bolton, England.
Mossberg Pressed Steel Corp., Attleboro, Mass.
New England Butt Co., Providence, R. I.
Wardwell Braiding Machine Co., Central Falls, R. I.
Wire & Textile Mach'y, Inc. (used) Pawtucket. R. I.

CASTINGS—Wire Mill
Scudder, E. J. Fdry. & Mach. Co., Trenton, N. J.

CEMENTS—Refractory
Norton Co., Worcester, Mass.

CLEANERS—Metal
American Chemical Paint Co., Ambler, Pa.
Apex Alkali Products Co., Phila., Pa.
Miller, R. H., Co., Inc., Homer, N. Y.
Parkin Chemical Co., The, Pittsburgh, Pa.
Rome Soap Manufacturing Co., Rome, N. Y.
Standard Industrial Compounds Co., Frankfort, Ill.

CLEANING & PICKLING EQUIP.—
Cleveland Tramrail Div., of the Cleveland Crane & Engineering Co., Wickliffe, O.
Morgan Construction Co., Worcester, Mass.
Vaughn Machinery Co., Cuyahoga Falls, O.
Wilson, Lee Engr. Co., Cleveland, Ohio
Youngstown Welding & Eng'g Co., Youngstown, Ohio.

CLOTH—WIRE, All Metals
Baker, James S., (Imports) Co., 311 California St., San Francisco, Calif.
Chase Brass & Copper Co., Waterbury, Conn.
Wickwire Bros., Cortland, N. Y.

COATING COMPOUNDS—
Apex Alkali Products Co., Philadelphia, Pa.
Miller, R. H., Co., Inc., Homer, N. Y.
Pennsylvania Salt Mfg. Company, Philadelphia, Pa.
Standard Industrial Compounds Co., Frankfort, Ill.

COMPOUNDS—Coppering
American Chemical Paint Co., Ambler, Pa.
Miller, R. H. Co., Inc., Homer, N. Y.

COMPOUNDS—Diamond (Pre-Mixed)
Eastern Carbide Corp., New Rochelle, N. Y.
Elgin National Watch Co., Abrasives Div., Elgin, Ill.
Hyprez Div., Engis Equipment Co., Chicago.
Rusch Wire Die Corporation, Croton-on-Hudson, N. Y.
Union Wire Die Corporation, New York, N. Y.
Whittaker, Clark & Daniel, Inc., New York, N. Y.

COMPOUNDS—Extrusion, for Wire
Electronic Rubber Co., Stamford, Conn.
Monsanto Chemical Company, Plastics Division, Springfield, Mass.
U. S. Industrial Chemicals Company, Division of National Distillers Products Corporation, New York, N. Y.

COMPOUNDS—For Improving Drawing and Extrusion
American Chemical Paint Co., Ambler, Pa.

COMPOUNDS—Metal Finishing
American Chemical Paint Co., Ambler, Pa.
Apex Alkali Products Co., Philadelphia, Pa.
Electronic Rubber Company, Stamford, Conn.
Hauger-Beegle Associates, Inc., Chicago, Ill.

COMPOUNDS—Phosphate Coating
American Chemical Paint Co., Ambler, Pa.

COMPOUNDS—Rust Preventing
American Chemical Paint Co., Ambler, Pa.
American Lanolin Corporation, Lawrence, Mass.
Apex Alkali Products Co., Philadelphia, Pa.
Rome Soap Manufacturing Co., Rome, N. Y.

COMPOUNDS—Rust Removing
American Chemical Paint Co., Ambler, Pa.
Apex Alkali Products Co., Philadelphia, Pa.
Magnuson Products Corporation, Brooklyn, N. Y.
Standard Industrial Compounds Co., Frankfort, Ill.

COMPOUNDS, Vinyl
Electronic Rubber Company, Stamford, Conn.
Hauger-Beegle Associates, Inc., Chicago, Ill.
Monsanto Chemical Company, Plastics Division, Springfield, Mass.

COMPOUNDS—Wire Drawing
Apex Alkali Products Co., Philadelphia, Pa.
Bick, Hans C., Inc., Reading, Pa.
Magnuson Products Corporation, Brooklyn, N. Y.
Miller, R. H. Co., Inc., Homer, N. Y.
Pacific Coast Borax Co., New York, N. Y.
Pennsylvania Salt Mfg. Company, Philadelphia, Pa.
Rome Soap Manufacturing Co., Rome, N. Y.
Standard Industrial Compounds Co., Frankfort, Ill.
Swift & Company, Chicago, Ill.

CONDUCTORS—Flexible, Electrical
Montgomery Co., The, Windsor Locks, Conn.

CONTAINERS—Wire Packaging
(See DRUMS—Wire Packaging)

COPHOLDERS—Steel
Apco Mossberg Co., Attleboro, Mass.
Carter & Co., Ltd., B. & F., Bolton, England.
Mossberg Pressed Steel Corp., Attleboro, Mass.
Wire & Textile Mach'y, Inc. (used) Pawtucket. R. I.

CORDS—Electrical, Tinsel Conductor
Montgomery Co., The, Windsor Locks, Conn.

COUNTERS—
(See MACHINERY—Measuring Wire and Cable)

CRANES—Wire Mill
Cleveland Tramrail Div. of the Cleveland Crane & Engineering Co., Wickliffe, O.
Morgan Construction Co., Worcester, Mass.
Vaughn Machinery Co., Cuyahoga Falls, O.

CUTTING TOOLS—Carbide
Carboloy Dept. of General Electric Co., Detroit.
Eastern Carbide Corp., New Rochelle, N. Y.
Firth Sterling, Inc., Pittsburgh, Pa.
Metal Carbides Corporation, Youngstown, Ohio
Vascoloy-Ramet Corp., Waukegan, Ill.

CUTTING TOOLS—Wire
Porter, H. K. Inc., Somerville, Mass.
Robinson, M. W. Co., Rockfall, Conn.

DIAMONDS—Industrial
Balloffet-Vianney Wire Die Co., Inc., Guttenberg, N. J.
Molina-Straus Diamond Products Co., New York, N. Y.
Rusch Wire Die Corp., Croton-on-Hudson, N. Y.
United States Industrial Diamond Corp., New York, N. Y.
Wayne Wire Die Co., Hillside, N. J.

DIAMOND POWDERS—
Danforth, The C. W. Co., Youngstown, Ohio
Elgin National Watch Co., Abrasives Div., Elgin, Ill.
Hyprez Div., Engis Equipment Co., Chicago, Ill.
Indiana Wire Die Co., Ft. Wayne, Ind.
Industrial Diamond Powders, Inc., Pittsburgh, Pa.
Kelly Wire Die Corp., New York, N. Y.
Molina-Straus Diamond Products Co., New York, N. Y.
National Research Company, St. Clair Shores, Mich.
New England Wire Die Co., Worcester, Mass.
Rusch Wire Die Corp., Croton-on-Hudson, N. Y.
Union Wire Die Corporation, New York, N. Y.
United States Industrial Diamond Corp., New York, N. Y.
Universal Wire Die Co., Cranford, N. J.
Wayne Wire Die Co., Hillside, N. J.

DIAMOND POWDER RECLAIMING—
Danforth, The C. W. Co., Youngstown, Ohio
Industrial Diamond Powders, Inc., Pittsburgh, Pa.
Kelly Wire Die Corp., New York, N. Y.
National Research Co., St. Clair Shores, Mich.
Rusch Wire Die Corp., Croton-on-Hudson, N. Y.
Union Wire Die Corporation, New York, N. Y.

DIAMOND TOOLS—
Indiana Wire Die Co., Ft. Wayne, Ind.
Metal Carbides Corporation, Youngstown, Ohio
Molina-Straus Diamond Products Co., New York, N. Y.
Universal Wire Die Co., Cranford, N. J.
Wayne Wire Die Co., Hillside, N. J.

DIES—Carbide, Tungsten & Tantalum
Balloffet-Vianney Wire Die Co., Inc., Guttenberg, N. J.
Boulin, Victor J., Inc., New York, N. Y.
Carboloy Dept. of General Electric Co., Detroit.
Eastern Carbide Corp., New Rochelle, N. Y.
Firth Sterling, Inc., Pittsburgh, Pa.
Indiana Wire Die Co., Fort Wayne, Ind.
Kelly Wire Die Corp., New York, N. Y.
Metal Carbides Corp., Youngstown, O.
Rusch Wire Die Corp., Croton-on-Hudson, N. Y.
Universal Wire Die Co., Cranford, N. J.
Vascoloy-Ramet Corp., Waukegan, Ill.
Wayne Wire Die Co., Hillside, N. J.

DIES—Cold Heading
Carboloy Dept. of General Electric Co., Detroit.
Eastern Carbide Corp., New Rochelle, N. Y.
Firth Sterling, Inc., Pittsburgh, Pa.
Indiana Wire Die Co., Ft. Wayne, Ind.
Metal Carbides Corporation, Youngstown, Ohio
Union Wire Die Corporation, New York, N. Y.
Vascoloy-Ramet Corp., Waukegan, Ill.

DIES—Diamond
Ajax Industrial Supplies, Inc., Ft. Wayne, Ind.
Balloffet-Vianney Wire Die Co., Inc., Guttenberg, N. J.
Boulin, Victor J., Inc., New York, N. Y.
Brenon, Inc., New Brunswick, N. J.
Ft. Wayne Wire Die, Inc., Fort Wayne, Ind.
Indiana Wire Die Co., Ft. Wayne, Ind.
Kelly Wire Die Corp., New York, N. Y.
National Wire Die Co., New York, N. Y.
New England Wire Die Co., Worcester, Mass.
Rusch Wire Die Corp., Croton-on-Hudson, N.Y.
Union Wire Die Corporation, New York, N. Y.
Universal Wire Die Co., Cranford, N. J.
Wayne Wire Die Co., Hillside, N. J.

DIES DIAMOND—Reversible
National Wire Die Co., New York, N. Y.

DIES—Extrusion
Carboloy Dept. of General Electric Co., Detroit.
Eastern Carbide Corp., New Rochelle, N. Y.
Firth Sterling, Inc., Pittsburgh, Pa.
Metal Carbides Corporation, Youngstown, Ohio
Rusch Wire Die Corp., Croton-on-Hudson, N. Y.
Universal Wire Die Co., Cranford, N. J.
Wayne Wire Die Co., Hillside, N. J.

DIES—Eyelet
Eastern Carbide Corp., New Rochelle, N. Y.

DIES—Nail, Nail Cutters, Feeder Blocks, Grippers, etc.
Firth Sterling, Inc., Pittsburgh, Pa.
Pittsburgh Carbide Die Co., Monongahela, Pa.

DIES—Pointing
Sjogren Tool and Machine Co., Auburn, Mass.

DIES—Repairs & Re-Cutting
Ajax Industrial Supplies, Inc., Fort Wayne, Ind.
Balloffet-Vianney Wire Die Co., Inc., Guttenberg, N. J.
Boulin, Victor J., Inc, New York, N. Y.
Carboloy Dept. of General Electric Co., Detroit.
Eastern Carbide Corp., New Rochelle, N. Y.
Ft. Wayne Wire Die., Inc., Fort Wayne, Ind.
Indiana Wire Die Co., Ft. Wayne, Ind.
Kelly Wire Die Corp., New York, N. Y.
Metal Carbides Corporation, Youngstown, Ohio
National Wire Die Co., New York, N. Y.
New England Wire Die Co., Worcester, Mass.
Rusch Wire Die Corp., Croton-on-Hudson, N. Y.
Union Wire Die Corporation, New York, N. Y.
Universal Wire Die Co., Cranford, N. J.
Vascoloy-Ramet Corp., Waukegan, Ill.
Wayne Wire Die Co., Hillside, N. J.

WHERE TO BUY, Continued

For more complete information, consult the annual Wire and Wire Products Buyers' Guide.

DIES—Special Shapes, Etc.
Eastern Carbide Corp., New Rochelle, N. Y.
Firth Sterling, Inc., Pittsburgh, Pa.
Indiana Wire Die Co., Ft. Wayne, Ind.

DIES—Swaging
Sjogren Tool and Mach. Co., Inc., Auburn, Mass.

DIES—Tube Drawing
Balloffet-Vianney Wire Die Co., Inc., Guttenberg, N. J.
Carboloy Dept. of General Electric Co., Detroit.
Eastern Carbide Corp., New Rochelle, N. Y.
Firth Sterling, Inc., Pittsburgh, Pa.
Indiana Wire Die Co., Fort Wayne, Ind.
Kelly Wire Die Corp., New York, N. Y.
Metal Carbides Corp., Youngstown, O.
Rusch Wire Die Corp., Croton-on-Hudson, N. Y.
Vascoloy-Ramet Corp., Waukegan, Ill.

DRAW BENCHES—
(See MACHINERY—Draw Benches)

DRIVES—Electric, Adjustable Speed
The Louis Allis Company, Milwaukee, Wisc.

DRUMS—Wire Packaging
Continental Can Company, Van Wert, Ohio

DRUMS & TRAVERSES—For Cable Reels
Hubbard Spool Co., Garrett, Ind.
Republic Steel Corp., Pressed Steel Div., Niles, Ohio

DRYING EQUIPMENT
Carl Mayer Corp., The, Cleveland, Ohio.
Industrial Ovens, Inc., Cleveland, Ohio
Michigan Oven Company, Detroit, Mich.
Rockwell, W. S. Co., Fairfield, Conn.

ENGINEERS—Consulting
Lubricants—Hans C. Bick, Inc., Reading, Pa.
Wire Mill—Clarence S. Arms, Worcester, Mass.

EYELETS—Brass or Zinc
Platt Bros. & Co., The, Waterbury, Conn.

FOAM PRODUCING COMPOUNDS—
American Chemical Paint Co., Ambler, Pa.
Parkin Chemical Co., The, Pittsburgh, Pa.

FREQUENCY CHANGERS
The Louis Allis Company, Milwaukee, Wisc.

FURNACES—Brazing
Electric Furnace Co., Salem, Ohio
Rockwell, W. S. Co., Fairfield, Conn.

FURNACES—Galvanizing Equipment
Electric Furnace Co., Salem, Ohio
Rockwell, W. S. Co., Fairfield, Conn.
Wilson, Lee, Engr. Co., Cleveland, Ohio

FURNACES—Heat Treating
Ajax Electric Co., Philadelphia, Pa.
Carl Mayer Corp., The, Cleveland, Ohio
Electric Furnace Co., Salem, Ohio
Rockwell, W. S., Co., Fairfield, Conn.
Wilson, Lee, Engr. Co., Cleveland, Ohio

FURNACES—Lead Melting
Electric Furnace Co., Salem, Ohio
Rockwell, W. S. Co., Fairfield, Conn.

FURNACES—Resistance Heating, Strand
(See Annealing Machines)

FURNACES—Salt Bath
Ajax Electric Co., Philadelphia, Pa.
Electric Furnace Co., Salem, Ohio
Rockwell, W. S. Co., Fairfield, Conn.

FURNACES—Strand Annealing
International Wire Products Corporation, Woodside Machinery Division, Midland Park, N. J.

GAUGES—Wire Diameter, Continuous
Industrial Gauges Corporation, West Englewood, N. J.

GALVANIZING EQUIPMENT — (See MACHINERY—Galvanizing Wire)

GEARMOTORS
The Louis Allis Company, Milwaukee, Wisc.

GRINDERS—Roll
Norton Co., The, Worchester, Mass.

GUIDES—For Wire
Heany Industrial Ceramic Corp., New Haven, Conn.

GUIDE TIPS—For Extruding Machines (See NOZZLES)

HAMMERS—Nail Heading
Firth Sterling, Inc., Pittsburgh, Pa.
Pittsburgh Carbide Die Co., Monongahela, Pa.

HAMMERS—Swaging
Sjogren Tool and Machine Co., Auburn, Mass.

HARDSURFACING ALLOYS—
(See Alloys—Hardsurfacing)

HOOKS—Pickling & Liming
Youngstown Welding & Eng'g' Co., Youngstown, Ohio

HOISTS—Electric Travelling
Cleveland Tramrail Div. of the Cleveland Crane & Engineering Co., Wickliffe, Ohio

INHIBITORS—Pickling
American Chemical Paint Co., Ambler, Pa.
Apex Alkali Products Co., Philadelphia, Pa.
Parkin Chemical Co., The, Pittsburgh, Pa.

INKS—Printing, for Insulated Wire
Kellogg Company, M. W., Chemical Manufacturing Division, Jersey City, N. J.

INSULATING MATERIALS—
Celanese Corporation of America, New York, N. Y.
Chemical Products Co., E. Providence, R. I.
duPont de Nemours Co., (Inc.), E. I., Polychemical Dept., Wilmington, Delaware
Electronic Rubber Co., Stamford, Conn.
Monsanto Chemical Company, Plastics Division, Springfield, Mass.
Pittsburgh Plate Glass Company, Pittsburgh, Pa.
Plymouth Cordage Company, Plymouth, Mass.
Shawinigan Resins Corporation, Springfield, Mass.
U. S. Industrial Chemicals Company, Division of National Distillers Products Corporation, New York, N. Y.
United States Rubber Company, Naugatuck Chemical Division, New York, N. Y.

INSULATING MATERIALS—Paper (For Electric Wire Cable)
Plymouth Cordage Company, Plymouth, Mass.

LACQUERING SYSTEMS — See MACH.—Lacquering Electric Wire

LACQUERS—For Electric Wire
Chemical Products Co., E. Providence, R. I.

LAGGING—Reel
North Anson Reel Co., No. Anson, Me.

LAME—LAHN—
Montgomery Co., The, Windsor Locks, Conn.

LIME—
Warner Co., The, Philadelphia and Bellefonte, Pa.

LUBRICANTS — For Metal Cutting, Stamping and Drawing
Apex Alkali Products Co., Philadelphia, Pa.
Bick, Hans C., Inc., Reading, Pa.
Magnuson Products Corporation, Brooklyn, N. Y.
Miller, R. H., Co., Inc., Homer, N. Y.
Rome Soap Mfg. Co., Rome, N. Y.
Standard Industrial Compounds Co., Frankfort, Ill.

LUBRICANTS—Wire Drawing
(See Compounds—Wire Drawing)

LUBRICANTS—Wire Rope
Bick, Hans C., Inc., Reading, Pa.
Swift & Co., Chicago, Ill.

MACHINERY—Armoring (Cable, Wire, Hose)
American Insulating Mach'y Co., Phila., Pa.
Sleeper & Hartley, Inc., Worcester, Mass.
Watson Machine Co., Paterson, N. J.
Wire & Textile Mach'y, Inc., (used), Pawtucket, R. I.

MACHINERY—Barbed Wire
Glader Wm., Machine Works, Chicago, Ill.
Wafios, Maschinenfabrik, Reutlingen, Wurtt., Germany

MACHINERY—Bending Wire
Eisler Engineering Co., Newark, N. J.

MACHINERY—Bobbin Winders
Cedar West Tool Inc., New York, N. Y.
Mummert-Dixon Company, Hanover, Pa.
Wire Equipment Mfg. Co., Trenton, N. J.

MACHINERY—Braiding
Carter & Co., Ltd., B. & F., Bolton, England.
New England Butt Co., Providence, R. I.
Wardwell Braiding Machine Co., Central Falls, R. I.
Wire & Textile Mach'y, Inc. (used) Pawtucket, R. I.

MACHINERY—Bunching
Cook Manufacturing Co., The, Paterson, N. J.
Edmands Company, The, Cranston, R. I.
Haskell-Dawes Machine Co., Philadelphia, Pa.
New England Butt Co., Providence, R. I.
Niehaus, K. A., Maschinenfabrik, Dusseldorf-Rath, Germany
Sleeper & Hartley, Inc., Worcester, Mass.
Watson Machine Co., Paterson, N. J.
Wire & Textile Mach'y, Inc. (used) Pawtucket, R. I.

MACHINERY—Bundling, Scrap
Sleeper & Hartley, Inc., Worcester, Mass.
Vaughn Machinery Co., Cuyahoga Falls, O.

MACHINERY—Cable, Electric
American Insulating Mach'y Co., Phila., Pa.
Haskell-Dawes Machine Co. Philadelphia, Pa.
New England Butt Co., Providence, R. I.
Niehaus, K. A., Maschinenfabrik, Dusseldorf-Rath, Germany
Sleeper & Hartley, Inc., Worcester, Mass.
Syncro Machine Co., Perth Amboy, N. J.
Watson Machine Co., Paterson, N. J.

MACHINERY—Capstans (See Capstans and Machinery—Winding Wire)

MACHINERY—Chain Making
Nilson, A. H. Machine Co., Bridgeport, Conn.
Wafios, Maschinenfabrik, Reutlingen, Wurtt., Germany

MACHINERY—Closing Rope
Niehaus, K. A., Maschinenfabrik, Dusseldorf-Rath, Germany
Watson Machine Co., Paterson, N. J.

MACHINERY—Coiling Rod
Vaughn Mach'y Co., Cuyahoga Falls, O.
Waterbury-Farrel Fdry. & Mach. Co., Waterbury, Conn.

MACHINERY—Cold Heading
Waterbury-Farrel Fdry. & Mach. Co., Waterbury, Conn.

MACHINERY—Coil Wrapping (Paper)
Angier Corporation, Framingham, Mass.

MACHINERY—Copper Wire Drawing
American Insulating Mach'y Co., Phila., Pa.
National Mach'y Exch. (Used), New York.
Syncro Machine Co., Perth Amboy, N. J.
Torrington Mfg. Co., Torrington, Conn.
Vaughn Machinery Co., Cuyahoga Falls, O.
Waterbury-Farrel Fdry. & Mach. Co., Waterbury, Conn.

MACHINERY—Covering Wire (See MACHINERY—Insulating Wire)

MACHINERY—Cutting
Eisler Engineering Co., Newark, N. J.
Lewis Machine Co., The, Cleveland, Ohio
Mettler Machine Tool, Inc., New Haven, Conn.
Wells, Frank L., Co., Kenosha, Wis.

MACHINERY—Descaling Rod, Dry
Fisher Associates, New York, N. Y.
Herborn, Herborn, Germany.

MACHINERY—Die Making
Boulin, Victor J., Inc., New York, N. Y.
Carboloy Dept. General Electric Co., Detroit, Mich.
Dykrex Corp., Roos Tool & Mfg. Div., Newark, N. J.
Firth Sterling, Inc., Pittsburgh, Pa.
Union Wire Die Corporation, New York, N. Y.
Wayne Wire Die Co., Hillside, N. J.

MACHINERY—Draw Benches
Morgan Construction Co., Worcester, Mass.
Torrington Mfg. Co., Torrington, Conn.
Vaughn Machinery Co., Cuyahoga Falls, O.

MACHINERY—Edging (See MACHINERY — Tandem Rolling and Edging Mills)

WHERE TO BUY, Continued

For more complete information, consult the annual Wire and Wire Products Buyers' Guide.

MACHINERY—Enameling
American Insulating Mach'y Co., Phila., Pa.
Cook Manufacturing Co., The, Paterson, N. J.
Industrial Ovens, Inc., Cleveland, Ohio
Litzler, C. A., Co., Inc., Cleveland, Ohio.
Michigan Oven, Company, Detroit, Mich.
Rockwell Co., W. S., Fairfield, Conn.

MACHINERY—Extruding
Davis-Standard Sales Corp., Mystic, Conn.
Entwistle Manufacturing Corporation, Providence, R. I.
Prodex Corp., Fords, N. J.
Royle, John, & Sons, Paterson, N. J.
Wire & Textile Mach'y, Inc. (used) Pawtucket, R. I.

MACHINERY—Fence
Glader, Wm., Machine Works, Chicago, Ill.

MACHINERY—Flat Wire
Fenn Manufacturing Co., Newington, Conn.
Mettler Machine Tool, Inc., New Haven, Conn.
Rockwell, W. S., Company, Fairfield, Conn.
Torrington Mfg. Co., Torrington, Conn.

MACHINERY—Forming Wire
Baird Machine Co., Stratford, Conn.
Nilson, A. H., Machine Co., Bridgeport, Conn.
Wafios, Maschinenfabrik, Reutlingen, Wurtt., Germany

MACHINERY—Galvanizing Wire
Sleeper & Hartley, Inc., Worcester, Mass.
Vaughn Machinery Co., Cuyahoga Falls, O.
Wilson, Lee, Engr. Co., Cleveland, Ohio

MACHINERY—Gang Winders
Entwistle Manufacturing Corporation, Providence, R. I.
Syncro Machine Co., Perth Amboy, N. J.
Watson Machine Co., Paterson, N. J.

MACHINERY—Grinding
Norton Co., The, Worcester, Mass.

MACHINERY—Insulating Wire
American Insulating Mach'y Co., Phila., Pa.
Davis-Standard Sales Corp., Mystic, Conn.
Litzler, C. A., Co., Inc., Cleveland, Ohio.
Michigan Oven Company, Detroit, Mich.
New England Butt Co., Providence, R. I.
Pourtier Pere et Fils, Romainville (Seine), France
Royle, John & Sons, Paterson, N. J.
Syncro Machine Co., Perth Amboy, N. J.
Wardwell Braiding Machine Co., Central Falls, R. I.
Watson Machine Co., Paterson, N. J.

MACHINERY—Lacquering Electric Wire
American Insulating Mach'y Co., Philadelphia.
Cook Mfg. Co., The, Paterson, N. J.
Industrial Ovens, Inc., Cleveland, O.
Michigan Oven Company, Detroit, Mich.

MACHINERY—Lock Washer
Sleeper & Hartley, Inc., Worcester, Mass.

MACHINERY—Looms, Wire Weaving
Cedar West Tool Inc., New York, N. Y.
E. V. G., Richard Kleinhans, New York, N. Y.
Maschinen & Stahl A. G., c/o Richard Kleinhans, Zurich, Switzerland
Mummert-Dixon Co., Hanover, Pa.
Wafios, Maschinenfabrik, Reutlingen, Wurtt., Germany

MACHINERY—Material Handling
(See Material Handling Equipment)

MACHINERY—Measuring Wire & Cable
Durant Mfg. Co., Milwaukee, Wis.
Entwistle Manufacturing Corporation, Providence, R. I.
New England Butt Co., Providence, R. I.
Standard Mill Supply Co., Pawtucket, R. I.
Watson Machine Co., Paterson, N. J.

MACHINERY—Nail and Tack
Baird Machine Co., The Stratford, Conn.
Glader, Wm., Machine Works, Chicago, Ill.
National Mach'y Exch. (Used), New York, N. Y.
Sleeper & Hartley, Inc., Worcester, Mass.
Wafios, Maschinenfabrik, Reutlingen, Wurtt., Germany

MACHINERY—Packaging Wire
Coulter & McKenzie Machine Co., Bridgeport, Conn.

MACHINERY—Pickling
Youngstown Welding & Eng'g Co., Youngstown, Ohio.

MACHINERY—Pin Making
Baird Machine Co., The, Stratford, Conn.

MACHINERY—Plating
Universal Industrial Equipment Co., Secaucus, N. J.

MACHINERY—Pointing
Morgan Construction Co., Worcester, Mass.
National Mach'y Exch. (Used), New York.
Scudder, E. J., Fdry. & Mach. Co., Trenton, N. J.
Sleeper & Hartley, Inc., Worcester, Mass.
Syncro Machine Co., Perth Amboy, N. J.
Vaughn Machinery Co., Cuyahoga Falls, O.
Waterbury-Farrel Foundry & Machine Co., Waterbury Conn.

MACHINERY—Printing on Electric Wire
Gillies, Duncan M. Co., Inc., Boylston, Mass.

MACHINERY—Pumps for Molten Metal
Wire Equipment Mfg. Co., Trenton, N. J.

MACHINERY—Re-Spooling
Boyd & Sons Manufacturing Corporation, Philadelphia, Pa.
Emory, Robert J., Co., Newark, N. J.
International Wire Products Corp., Woodside Machinery Division, Midland Park, N. J.
Mummert-Dixon Co., Hanover, Pa.
National Mach'y Exch. (Used), New York.
Vaughn Machinery Co., Cuyahoga Falls, O.
Watson Machine Co., Paterson, N. J.
Wire Equipment Mfg. Co., Trenton, N. J.
Wire Insulating Machinery Inc., Northboro, Mass.
Wire & Textile Mach'y, Inc. (used) Pawtucket, R. I.

MACHINERY—Rod Mill
Fenn Manufacturing Co., Newington, Conn.
Morgan Construction Co., Worcester, Mass.

MACHINERY—Rolling Mill
Fenn Manufacturing Co., Newington, Conn.
Morgan Construction Co., Worcester, Mass.
Torrington Mfg. Co., Torrington, Conn.
Waterbury-Farrel Foundry & Machine Co., Waterbury, Conn.

MACHINERY—Rubber Insulating
Davis-Standard Sales Corp., Mystic, Conn.
Litzler, C. A., Co., Inc., Cleveland, Ohio.
Royle, John & Sons, Paterson, N. J.
Wire & Textile Mach'y, Inc. (used) Pawtucket, R. I.

MACHINERY—Serving
Pourtier Pere et Fils, Romainville (Seine), France
Wardwell Braiding Machine Co., Central Falls, R. I.

MACHINERY—Spark Testing
Entwistle Manufacturing Corporation, Providence, R. I.
Peschel Electronics, Inc., New Rochelle, N. Y.
Wire & Textile Mach'y, Inc. (used) Pawtucket, R. I.

MACHINERY—Spring Making
National Mach'y Exch. (Used), New York, N. Y.
Sleeper & Hartley, Inc., Worcester, Mass.
Torrington Mfg. Co., Torrington, Conn.
Wafios, Maschinenfabrik, Reutlingen, Wurtt., Germany
Wells, Frank L., Co., Kenosha, Wisc.

MACHINERY—Staple
Nilson, A. H. Machine Co., Bridgeport, Conn.
Sleeper & Hartley, Inc., Worcester, Mass.
Wafios, Maschinenfabrik, Reutlingen, Wurtt., Germany

MACHINERY—Straightening & Cutting
Lewis Machine Co., The, Cleveland, Ohio
Mettler Machine Tool Co., New Haven, Conn.
National Mach'y Exch. (Used), New York, N. Y.
Geo. C. Pattersen Machine Co., Cleveland, Ohio.
Wells, Frank L., Co., Kenosha, Wisc.

MACHINERY—Stranding
Carter & Co., Ltd., B. & F., Bolton, England
Haskell-Dawes Machine Co., Philadelphia, Pa.
Milton Machine Works, Inc., Milton, Pa.
New England Butt Co., Providence, R. I.
Niehaus, K. A., Maschinenfabrik, Dusseldorf-Rath, Germany
Sleeper & Hartley, Inc., Worcester, Mass.
Syncro Machine Co., Perth Amboy, N. J.
Watson Machine Co., Paterson, N. J.

MACHINERY—Swaging
Fenn Manufacturing Co., Newington, Conn.
Waterbury-Farrel Foundry & Machine Co., Waterbury, Conn.

MACHINERY—Take-Up and Pay-Out
American Insulating Mach'y Co., Phila., Pa.
Davis-Standard Sales Corp., Mystic, Conn.
Entwistle Manufacturing Corporation, Providence, R. I.
Fenn Manufacturing Co., Newington, Conn.
Industrial Ovens, Inc., Cleveland, Ohio
International Wire Products Corporation, Woodside Machinery Division, Midland Park, N. J.
Litzler, C. A., Co., Inc., Cleveland, Ohio.
Standard Mill Supply Co., Pawtucket, R. I.
Watson Machine Co., Paterson, N. J.
Wire Equipment Mfg. Co., Trenton, N. J.

MACHINERY—Taping
American Insulating Mach'y Co., Phila., Pa.
New England Butt Co., Providence, R. I.
Pourtier Pere et Fils, Romainville (Seine), France
Syncro Machine Co., Perth Amboy, N. J.
Watson Machine Co., Paterson, N. J.
Wire & Textile Mach'y, Inc. (used) Pawtucket, R. I.

MACHINERY—Testing Magnet Wire Coatings for Pin Holes
Peschel Electronics, Inc., New Rochelle, N. Y.

MACHINERY—Testing, Physical
Scott Testers, Inc., Providence, R. I.

MACHINERY—Tinning Wire
American Insulating Mach'y Co., Phila., Pa.
Cook Manufacturing Co., The, Paterson, N. J.
International Wire Products Corporation, Woodside Machinery Division, Midland Park, N. J.
Syncro Machine Co., Perth Amboy, N. J.
Universal Industrial Equipment Co., Secaucus, N. J.

MACHINERY—Tinsel Rolling Mills
American Insulating Mach'y Co., Phila., Pa.

MACHINERY—Trolley Wire
Torrington Mfg. Co., Torrington, Conn.
Vaughn Machinery Co., Cuyahoga Falls, O.

MACHINERY—Tube Mill, Cold Drawing
Mettler Machine Tool, Inc., New Haven, Conn.

MACHINERY—Turks Head
Fenn Manufacturing Co., Newington, Conn.

MACHINERY—Twinning
(See Mach.—Bunching)

MACHINERY—Twisters, Wire
Cook Manufacturing Co., The, Paterson, N. J.
Edmands Company, The, Cranston, R. I.
Haskell-Dawes Machine Co., Philadelphia, Pa.

MACHINERY—Used
National Machinery Exchange, New York, N. Y.
Wire & Textile Machy., Inc., Pawtucket, R. I.

MACHINERY—Welded Wire Mesh
E. V. G., Richard Kleinhans, New York, N. Y.
Maschinen & Stahl A. G., c/o Richard Kleinhans, Zurich, Switzerland

MACHINERY—for Wire Welding
(See WELDERS—Butt and Spot and Machinery —Welding Wire Fabrics)

MACHINERY—Winding Wire
Emory, Robert J., Newark, N. J.
Fenn Manufacturing Co., Newington, Conn.
Hobbs Manufacturing Co., Worcester, Mass.
Mummert-Dixon Co., Hanover, Pa.
New England Butt Co., Providence, R. I.
Standard Mill Supply Co., Pawtucket, R. I.
Watson Machine Co., Paterson, N. J.
Wire Equipment Mfg. Co., Trenton, N. J.
Wire Insulating Machinery Inc., Northboro, Mass.

MACHINERY—Wire Drawing
Cook Manufacturing Co., The, Paterson, N. J.
Coulter & McKenzie Machine Co., Bridgeport, Conn.
Fenn Manufacturing Co., Newington, Conn.
Herborn, Herborn, Germany
International Wire Products Corporation, Woodside Machinery Division, Midland Park, N. J.
Morgan Construction Co., Worcester, Mass.
Morgardshammers Mek Verstads AB, Morgardshammer, Sweden
National Mach'y Exch. (Used), New York. N. Y.
Scudder, E. J., Fdry. & Mach. Co., Trenton, N. J.
Sleeper & Hartley, Inc., Worcester, Mass.
Syncro Machine Co., Perth Amboy, N. J.
Vaughn Machinery Co., Cuyahoga Falls, Ohio
Waterbury-Farrel Foundry & Machine Co., Waterbury, Conn.

WHERE TO BUY, Continued

For more complete information, consult the annual Wire and Wire Products Buyers' Guide.

MACHINERY—Wire Forming
Baird Machine Co., The, Stratford, Conn.
National Mach'y Exch. (Used), New York, N. Y.
Nilson, A. H. Machine Co., Bridgeport, Conn.
Sleeper & Hartley, Inc., Worcester, Mass.

MACHINERY—Wire Rope
Carter & Co., Ltd., B. & F., Bolton, England.
Milton Machine Works, Inc., Milton, Pa.
New England Butt Co., Providence, R. I.
Niehaus, K. A., Maschinenfabrik, Dusseldorf-Rath, Germany
Watson Machine Co., Paterson, N. J.

MACHINERY—Wrapping with Paper
Larmuth (1947) Ltd., Swinton, England
Terkelsen Machine Co., Boston, Mass.

MATERIAL HANDLING EQUIPMENT—
Cleveland Tramrail Div. of The Cleveland Crane & Engineering Co., Wickliffe, O.

MOTORS—Electric, A. C. & D. C.
The Louis Allis Company, Milwaukee, Wisc.

NAIL TOOLING—Tungsten Carbide
Firth Sterling, Inc., Pittsburgh, Pa.
Pittsburgh Carbide Die Co., Monongahela, Pa.

NAILS—Wire
Bethlehem Steel Co., Bethlehem, Pa.
Continental Steel Corp., Kokomo, Ind.
Keystone Steel & Wire Co., Peoria, Ill.
Sheffield Steel Corp., Kansas City, Mo.
Wickwire Brothers, Inc., Cortland, N. Y.

NIPPERS—Wire Cutting
Robinson, M. W. Co., Rockfall, Conn.

NOZZLES—For Extruding Machines
Wire Tool Div., Bridgeport Jig Boring Co., Bridgeport, Conn.

OVENS—Cable Lacquering and Enameling
American Insulating Mach'y Co., Phila., Pa.
Carl Mayer Corp., The, Cleveland, Ohio
Industrial Ovens, Inc., Cleveland, Ohio.
Litzler, C. A., Co., Inc., Cleveland, Ohio.
Michigan Oven Company, Detroit, Mich.
Rockwell Co., W. S., Fairfield, Conn.

OVENS—Rod Bakers
Carl Mayer Corp., The, Cleveland, Ohio

OVENS—Welding Rod Coating
Carl Mayer Corp., The, Cleveland, Ohio
Industrial Ovens, Inc., Cleveland, Ohio
Litzler, C. A., Co., Inc., Cleveland, Ohio.

PAINT BONDING CHEMICALS—
American Chemical Paint Co., Ambler, Pa.

PAINTS—Heat Resisting
American Chemical Paint Co., Ambler, Pa.

PAPER—Creped Wrapping
Angier Corporation, Framingham, Mass.
Arkell Safety Bag Company, New York, N. Y.
National Waterproof Papers, Inc., Beverly, N. J.
Terkelsen Machine Co., Boston, Mass.

PAPER—For Coil Wrapping and Corrosion Prevention
Angier Corporation, Framingham, Mass.
Arkell Safety Bag Company, New York, N. Y.
National Waterproof Papers, Inc., Beverly, N. J.
Terkelsen Machine Co., Boston, Mass.

PAPER—Insulating
Plymouth Cordage Company, Plymouth, Mass.

PATENT ATTORNEYS—
Lancaster, Allwine & Rommel, Washington, D. C.

PAY-OUT SYSTEMS—
(See MACHINERY—Take-Up & Pay-Out)

PHOSPHATE COATING CHEMICALS
(See COMPOUNDS—Phosphate Coating)

PICKLING COMPOUNDS—
See (Inhibitors—Pickling)

PICKLING—Hooks, etc. Acid Resisting
Youngstown Welding & Eng'g Co., Youngstown, Ohio.

PLASTICIZERS—
Celanese Corporation of America, New York, N. Y.
Monsanto Chemical Company, Plastics Division, Springfield, Mass.

PLASTICS COMPOUNDING — Custom
Electronic Rubber Company, Stamford, Conn.
Plandex Corporation, Downingtown, Pa.

PLASTICS—for Wire Insulation
Celanese Corporation of America, New York, N. Y.
duPont de Nemours Co., (Inc.), E. I., Polychemical Dept., Wilmington, Delaware
Electronic Rubber Co., Stamford, Conn.
Monsanto Chemical Company, Plastics Division, Springfield, Mass.
Plandex Corporation, Downingtown, Pa.
Shawinigan Resins Corporation, Springfield, Mass.
U. S. Industrial Chemicals Company, Division of National Distillers Products Corporation, New York, N. Y.
United States Rubber Company, Naugatuck Chemical Division, New York, N. Y.

POINTING WIRE
Main, Robert A. & Sons, Inc., Paramus, N. J.

POTS—Lacquer
Industrial Ovens, Inc., Cleveland, Ohio

PRINTING WHEELS—for Electric Wire
Gillies, Duncan M. Co., Inc. Boylston, Mass.

PULLERS AND GRIPS—For Wire
Morgan Construction Co., Worcester, Mass.
Scudder, E. J. Fdry. & Mach. Co., Trenton, N. J.
Sjogren Tool and Machine Co., Auburn, Mass.
Sleeper & Hartley, Inc., Worcester, Mass.
Vaughn Machinery Co., Cuyahoga Falls, Ohio

PUMPS—Molten Metal
Fisher Associates, New York, N. Y.

REEL AND TENSION STANDS—
Industrial Ovens, Inc., Cleveland, Ohio.
Sleeper & Hartley, Inc., Worcester, Mass.
Standard Mill Supply Co., Pawtucket, R. I.
Synero Machine Co., Perth Amboy, N. J.
Watson Machine Co., Paterson, N. J.

REEL CRUTCHES—
Watson Machine Co., Paterson, N. J.

REELS & SPOOLS—Aluminum Alloy
Acrometal Products, Inc.,Minneapolis, Minn.
Hubbard Spool Co., Garrett, Ind.
Milton Machine Works, Inc., Milton, Pa.
Muncy Valley Industries, Inc., Muncy Valley, Pa.
Wardwell Braiding Machine Co., Central Falls, R. I.

REELS & SPOOLS—Annealing and Stranding
Acrometal Products, Inc., Minneapolis, Minn.
American Pulley Company The, Philadelphia, Pa.
Apco Mossberg Co., Attleboro, Mass.
Hubbard Spool Co., Garrett, Ind.
Milton Machine Works, Inc., Milton, Pa.
Mossberg Pressed Steel Corp., Attleboro, Mass.
Muncy Valley Industries, Inc., Muncy Valley, Pa.
Republic Steel Corp., Pressed Steel Div., Niles, Ohio

REELS—Metal Bound
Durkee Mfg. Co. Inc., Pine River, Minn.
Hubbard Spool Co., Garrett, Ind.
McCaskie, Inc., William, Westport, Mass.
North Anson Reel Co., No. Anson, Me.
Strand-Buffalo Corporation, North Tonawanda, N. Y.

REELS—Plywood
Carris Reels, Inc., Rutland, Vt.
Hubbard Spool Co., Garrett, Ind.
McCaskie, Inc., William, Westport, Mass.
Nelson Company, The, Baltimore, Md.
Strand-Buffalo Corporation, North Tonawanda, N. Y.

REELS & SPOOLS—Steel (All Types)
Acrometal Products, Inc., Minneapolis, Minn.
American Pulley Company The, Philadelphia, Pa.
Apco Mossberg Co., Attleboro, Mass.
Clark, J. L. Mfg. Co., Rockford, Ill.
Hubbard Spool Co., Garrett, Ind.
Mason Can Company, East Providence, R. I.
Milton Machine Works, Inc., Milton, Pa.
Mossberg Pressed Steel Corp., Attleboro, Mass.
New York Engineering Co., New York, N. Y.
Republic Steel Corp., Pressed Steel Div., Niles, Ohio
Wardwell Braiding Machine Co., Central Falls, R. I.

REELS—Wire Mill
Acrometal Products, Inc., Minneapolis, Minn.
American Pulley Company The, Philadelphia, Pa.
Apco Mossberg Co., Attleboro, Mass.
Bridge Mfg. Co., The, Hazardville, Conn.
Carris Reels, Inc., Rutland, Vt.
Durkee Mfg. Co. Inc., Pine River, Minn.
Hubbard Spool Co., Garrett, Ind.
Mason Can Co., East Providence, R. I.
McCaskie, Inc., William, Westport, Mass.
Mettler Machine Tool, Inc., New Haven, Conn.
Milton Machine Works, Inc., Milton, Pa.
Mossberg Pressed Steel Corp., Attleboro, Mass.
New York Engineering Company, New York, N. Y.
Nilson, A. H. Machine Co., Bridgeport, Conn.
North Anson Reel Co., No. Anson, Me.
Republic Steel Corp., Pressed Steel Div., Niles, Ohio
Wardwell Braiding Machine Co., Central Falls, R. I.

REELS & SPOOLS—Wood
American Woodworking Co., Chicago, Ill.
Bridge Mfg. Co., The, Hazardville, Conn.
Carris Reels, Inc., Rutland, Vt.
Durkee Mfg. Co. Inc., Pine River, Minn.
Hubbard Spool Co., Garrett, Ind.
McCaskie, Inc., William, Westport, Mass.
Muncy Valley Industries, Inc., Muncy Valley, Pa.
Nelson Company, The, Baltimore, Md.
North Anson Reel Co., No. Anson, Me.
Strand-Buffalo Corporation, North Tonawanda, N. Y.

REFRACTORIES—High Temperature
Norton Company, Worcester, Mass.

ROD BAKERS—
(See OVENS—Rod Bakers)

RODS—Stainless Steel
American Steel & Wire Div., United States Steel Corp., Cleveland, O.
Crucible Steel Co. of America, Pittsburgh, Pa.
Pittsburgh Steel Co., Pittsburgh, Pa.

RODS—Wire—Non-Ferrous
Chase Brass & Copper Co., Waterbury, Conn.
Kaiser Aluminum & Chemical Corp., Oakland, Calif.
Platt Bros. & Co., The, Waterbury, Conn.
Scovill Mfg. Co., Waterbury, Conn.
Titan Metal Manufacturing Co., Bellefonte, Pa.

RODS—Steel
American Steel & Wire Div., United States Steel Corp., Cleveland, O.
Bethlehem Steel Co., Bethlehem, Pa.
Colorado Fuel and Iron Corporation, Pacific Coast Division, Oakland, Calif.
Continental Steel Corp., Kokomo, Ind.
Crucible Steel Co. of America, Pittsburgh, Pa.
Keystone Steel & Wire Co., Peoria, Ill.
Pittsburgh Steel Co., Pittsburgh, Pa
Sheffield Steel Corp., Kansas City, Mo.
Wickwire Spencer Steel Div., Colorado Fuel & Iron Corp., New York, N. Y.
Youngstown Sheet & Tube Co., Youngstown, O.

ROPE—Wire
Bethlehem Steel Co., Bethlehem, Pa.
Roebling's, John A. Sons Corp., Trenton, N. J

RUST PROOF COMPOUNDS—
(See COMPOUNDS—RUST Preventing)

RUST REMOVING COMPOUNDS—
(See COMPOUNDS—Rust Preventing)

SATURATION SYSTEMS—
Industrial Ovens, Inc., Cleveland, Ohio
Watson Machine Co., Paterson, N. J.
Wire & Textile Mach'y, Inc. (used) Pawtucket R. I.

SOAPS—Industrial and Wire Drawing
(See COMPOUNDS—Wire Drawing)

SPOOLS—(See Reels & Spools)

SPOOLS—Stamped Metal for Retail Wire Sales
Clark, J. L. Mfg. Co., Rockford, Ill.
Mason Can Company, East Providence, R. I.

STAMPINGS—Steel
Acrometal Products, Inc., Minneapolis, Minn.
Mossberg Pressed Steel Corp., Attleboro, Mass.

STRIP—Steel
Bethlehem Steel Co., Bethlehem, Pa.
Continental Steel Corp., Kokomo, Ind.
Jones & Laughlin Steel Corporation, Pittsburgh, Pa.
Roebling's, John A. Sons Corp., Trenton, N. J
Youngstown Sheet & Tube Co., Youngstown, O

TANKS—Compound
Watson Machine Co., Paterson, N. J.

TESTERS — INSULATION
(See MACHINERY—Spark Testers)

TESTING EQUIPMENT
(See MACHINERY Testing, Physical and Diameter Testing)

TINSEL—Electric Conductor
Montgomery Co., The, Windsor Locks, Conn.

TINSEL WIRE—Resistance, Lame, Decorative Cords Thread—Bare Copper Silver and False Gold Coated, etc.
(See TINSEL—Electric Conductor)

WHERE TO BUY, Continued

For more complete information, consult the annual Wire and Wire Products Buyers' Guide.

TOOLS—Nail Machine
Pittsburgh Carbide Die Co., Monongahela, Pa.
Wire Equipment Mfg. Co., Trenton, N. J.

TOOLS—Wire Cutting
Porter, H. K. Inc., Somerville, Mass.

TOOLS—Spring Forming, Carbide
Crafts, Arthur A., Company, Inc., Boston, Mass.

TRAMRAIL SYSTEMS—
Cleveland Tramrail Div. of the Cleveland Crane & Engineering Co., Wickliffe, O.

TRANSMISSIONS—Variable speed (See Adjustable Speed Drives)

TRAVERSES & DRUMS—For Reels
(See Drums & Traverses)

TRAVERSE MECHANISMS—
Apco Mossberg Co., Attleboro, Mass.
New England Butt Co., Providence, R. I.
Watson Machine Co., Paterson, N. J.
Wire & Textile Mach'y, Inc. (used) Pawtucket, R. I.

VARNISHES & LACQUERS—for Electric Wire
Chemical Products Co., E. Providence, R. I.
Shawinigan Resins Corporation, Springfield, Mass.

VULCANIZING PANS AND EQUIPMENT—
American Insulating Mach'y Co., Phila., Pa.
Litzler, C. A., Co., Inc., Cleveland, Ohio.
Mossberg Pressed Steel Corp., Attleboro, Mass.
Wire Insulating Machinery Inc., Northboro, Mass.

WELDERS—Spot and Butt and Welding Wire Fabrics
Eisler Engineering Co., Newark, N. J.
Micro Products Co., Chicago, Ill.

WIRE—Aluminum
Alabama Wire Company, Florence, Ala.
International Wire Products Corporation, Woodside Machinery Division, Midland Park, N. J.
Kaiser Aluminum & Chemical Corp., Oakland, Calif.
Malin & Co., The, Cleveland, Ohio
National Standard Company, Niles, Mich.
Scovill Mfg. Co., Waterbury, Conn.
United Wire & Supply Corporation, Providence, R. I.

WIRE—Barbed
Jones & Laughlin Steel Corporation, Pittsburgh, Pa.

WIRE—Brass and Bronze
Chase Brass & Copper Co., Waterbury, Conn.
International Wire Products Corporation, Woodside Machinery Division, Midland Park, N. J.
Jury's Wire Products, Inc., Bloomfield, N. J.
Scovill Mfg. Co., Waterbury, Conn.
Titan Metal Manufacturing Co., Bellefonte, Pa.
United Wire & Supply Corporation, Providence, R. I.

WIRE—Bunched & Stranded, Copper
Camden Wire Co., Camden, N. Y.
International Wire Products Corporation, Woodside Machinery Division, Midland Park, N. J.

WIRE—Cast
Youngstown Sheet & Tube Co., Youngstown, O.

WIRE—Cold Heading
American Steel & Wire Div., United States Steel Corp., Cleveland, O.
Bethlehem Steel Co., Bethlehem, Pa.
Camden Wire Co., Camden, N. Y.
Chase Brass & Copper Co., Waterbury, Conn.
Colorado Fuel and Iron Corporation, Pacific Coast Division, Oakland, Calif.
Continental Steel Corp., Kokomo, Ind
Crucible Steel Co. of America, Pittsburgh, Pa.
Jones & Laughlin Steel Corporation, Pittsburgh, Pa.
Kaiser Aluminum & Chemical Corp., Oakland, Calif.
Keystone Steel & Wire Co., Peoria, Ill.
Pittsburgh Steel Co., Pittsburgh, Pa.
Scovill Mfg. Co., Waterbury, Conn.
Sheffield Steel Corp., Kansas City, Mo.
Titan Metal Manufacturing Co., Bellefonte, Pa.
United Wire & Supply Corporation, Providence, R. I.
Wickwire Spencer Steel Div., The Colorado Fuel & Iron Corp., New York, N. Y.
Youngstown Sheet & Tube Co., Youngstown, O.

WIRE—Copper
Camden Wire Co., Inc., Camden, N. Y.
Chase Brass & Copper Co., Waterbury, Conn.
International Wire Products Corporation, Woodside Machinery Division, Midland Park, N. J.
Jury's Wire Products, Inc., Bloomfield, N. J.
United Wire & Supply Corporation, Providence, R. I.

WIRE—For Electrical Conductors
Camden Wire Co., Camden, N. Y.
Kaiser Aluminum & Chemical Corp., Oakland, Calif.
United Wire & Supply Corporation, Providence, R. I.

WIRE—Flat, Fine
Montgomery Co., The, Windsor Locks, Conn.
United Wire & Supply Corporation, Providence, R. I.
Wickwire Spencer Steel Div., Colorado Fuel & Iron Corp., New York, N. Y.

WIRE—Galvanized
American Steel & Wire Div., United States Steel Corp., Cleveland, O.
Colorado Fuel and Iron Corporation, Pacific Coast Division, Oakland, Calif.
Jones & Laughlin Steel Corporation, Pittsburgh, Pa.
National Standard Company, Niles, Mich.
Roebling's, John A. Sons Corp., Trenton, N. J.
Sheffield Steel Corp., Kansas City, Mo.
Wickwire Spencer Steel Div., The Colorado Fuel & Iron Corp., New York, N. Y.

WIRE—Manufacturers
Alabama Wire Company, Florence, Ala.
Alloy Metal Wire Div., H. K. Porter Company, Inc., Prospect Park, Pa.
American Steel & Wire Div., United States Steel Corp., Cleveland, O.
Bethlehem Steel Co., Bethlehem, Pa.
Chase Brass & Copper Co., Waterbury, Conn.
Colorado Fuel and Iron Corporation, Pacific Coast Division, Oakland, Calif.
Continental Steel Corp., Kokomo, Ind.
Crucible Steel Co. of America, Pittsburgh, Pa.
Johnson Steel & Wire Co., Inc., Worcester, Mass.
Jones & Laughlin Steel Corporation, Pittsburgh, Pa.
Kaiser Aluminum & Chemical Corp., Oakland, Calif.
Keystone Steel & Wire Co., Peoria, Ill.
National Lock Washer Company, The, Newark, N. J.
Pittsburgh Steel Co., Pittsburgh, Pa.
Roebling's, John A., Sons Corp., Trenton, N. J.
Scovill Mfg. Co., Waterbury, Conn.
Sheffield Steel Corp., Kansas City, Mo.
Titan Metal Manufacturing Co., Bellefonte, Pa.
United Wire & Supply Corporation, Providence, R. I.
U. S. Steel Corp., N. Y., N. Y.
Wickwire Brothers, Inc., Cortland, N. Y.
Wickwire Spencer Steel Div., The Colorado Fuel & Iron Corp., New York, N. Y.
Youngstown Sheet & Tube Co., Youngstown, O.

WIRE—Music
Johnson Steel & Wire Co., Inc., Worcester, Mass.
Malin & Co., The, Cleveland, Ohio

WIRE—Needle
Carpenter Steel Company, Webb Wire Division, New Brunswick, N. J.

WIRE—Nickel Alloy
Carpenter Steel Company, Webb Wire Division, New Brunswick, N. J.

WIRE—Nickel Silver and Phosphor Bronze
Alloy Metal Wire Div., H. K. Porter Company, Inc., Prospect Park, Pa.
Chase Brass & Copper Co., Waterbury, Conn.
International Wire Products Corporation, Woodside Machinery Division, Midland Park, N. J.
Malin & Co., The, Cleveland, Ohio
Titan Metal Manufacturing Co., Bellefonte, Pa.
United Wire & Supply Corporation, Providence, R. I.

WIRE—Oil Tempered
Crucible Steel Co. of America, Pittsburgh, Pa.
Jones & Laughlin Steel Corporation, Pittsburgh, Pa.
Pittsburgh Steel Co., Pittsburgh, Pa.
Roebling's, John A., Sons Corp., Trenton, N. J.
Sheffield Steel Corp., Kansas City, Mo.
Wickwire Spencer Steel Div., Colorado Fuel & Iron Corp., New York, N. Y.

WIRE—Pointed
Main, Robert A. & Sons, Inc., Paramus, N.J.

WIRE—Silver Plated Copper
Camden Wire Co., Camden, N. Y.
International Wire Products Corporation, Woodside Machinery Division, Midland Park, N. J.

WIRE—Special Shapes
Alloy Metal Wire Div., H. K. Porter Company, Inc., Prospect Park, Pa.
Continental Steel Corp., Kokomo, Ind.
Crucible Steel Co. of America, Pittsburgh, Pa.
National Lock Washer Company, The, Newark, N. J.
Titan Metal Manufacturing Co., Bellefonte, Pa.
United Wire & Supply Corporation, Providence, R. I.
Wickwire Spencer Steel Div., The Colorado Fuel & Iron Corp., New York, N. Y.

WIRE—Spring
Alloy Metal Wire Div., H. K. Porter Company, Inc., Prospect Park, Pa.
American Steel & Wire Div., United States Steel Corp., Cleveland, O.
Bethlehem Steel Co., Bethlehem, Pa.
Colorado Fuel and Iron Corporation, Pacific Coast Division, Oakland, Calif.
Continental Steel Corp., Kokomo, Ind.
Crucible Steel Co. of America, Pittsburgh, Pa.
Johnson Steel & Wire Co., Inc., Worcester, Mass.
Jones & Laughlin Steel Corporation, Pittsburgh, Pa.
Keystone Steel & Wire Co., Peoria, Ill.
National Standard Company, Niles, Mich.
Pittsburgh Steel Co., Pittsburgh, Pa.
Roebling's, John A., Sons Corp., Trenton, N. J
Sheffield Steel Corp., Kansas City, Mo.
United Wire & Supply Corporation, Providence, R. I.
Wickwire Spencer Steel Div., The Colorado Fuel & Iron Corp., New York, N. Y.
Youngstown Sheet & Tube Co., Youngstown, O.

WIRE—Stainless Steel
American Steel & Wire Div., United States Steel Corp., Cleveland, O.
Carpenter Steel Company, Webb Wire Division, New Brunswick, N. J.
Crucible Steel Co. of America, Pittsburgh, Pa.
Firth Sterling, Inc., Pittsburgh, Pa.
International Wire Products Corporation, Woodside Machinery Division, Midland Park, N. J.
National Lock Washer Company, The, Newark, N. J.
National Standard Company, Niles, Mich.
Pittsburgh Steel Co., Pittsburgh, Pa.

WIRE—Steel—Also Coppered and Galvanized Steel
Alloy Metal Wire Div., H. K. Porter Company, Inc., Prospect Park, Pa.
American Steel & Wire Div., United States Steel Corp., Cleveland, O.
Bethlehem Steel Co., Bethlehem, Pa.
Colorado Fuel and Iron Corporation, Pacific Coast Division, Oakland, Calif.
Continental Steel Corp., Kokomo, Ind.
Crucible Steel Co. of America, Pittsburgh, Pa.
Johnson Steel & Wire Co., Inc., Worcester, Mass.
Jones & Laughlin Steel Corporation, Pittsburgh, Pa.
Jury's Wire Products, Inc., Bloomfield, N. J.
Keystone Steel & Wire Co., Peoria, Ill.
National Standard Company, Niles, Mich.
Pittsburgh Steel Co., Pittsburgh, Pa.
Roebling's, John A., Sons Corp., Trenton, N. J.
Sheffield Steel Corp., Kansas City, Mo.
U. S. Steel Export Co., New York, N. Y.
Wickwire Brothers, Inc., Cortland, N. Y.
Wickwire Spencer Steel Div., The Colorado Fuel & Iron Corp., New York, N. Y.
Youngstown Sheet & Tube Co., Youngstown, O

WIRE—Straightening and Cutting
Colorado Fuel and Iron Corporation, Pacific Coast Division, Oakland, Calif.
Jones & Laughlin Steel Corporation, Pittsburgh, Pa.
United Wire & Supply Corporation, Providence, R. I.
Wickwire Brothers, Inc., Cortland, N. Y.
Wickwire Spencer Steel Div., Colorado Fuel & Iron Corp., New York, N. Y.

WIRE—Tinned Copper
Camden Wire Co., Camden, N. Y.
International Wire Products Corporation, Woodside Machinery Division, Midland Park, N. J.
Jury's Wire Products, Inc., Bloomfield, N. J.

WIRE—Weaving
Alabama Wire Company, Florence, Ala.

WIRE—Zinc
Platt Bros. & Co., The, Waterbury, Conn.

WOOD—for Guide, Rolls, Bushings, Wear Parts, etc.

WRAPPING PAPER—Creped
(See PAPER—Creped Wrapping)

YARNS & TAPES—Insulating
Celanese Corporation of America, New York, N. Y.
Pittsburgh Plate Glass Company, Pittsburgh, Pa.

YARN TESTERS—
Scott Testers, Inc., Providence, R. I.

The WATSON MACHINE COMPANY

ESTABLISHED 1845

PATERSON 3, NEW JERSEY, U. S. A.

ELECTRICAL WIRE AND CABLE, WIRE ROPE, CORDAGE AND MASTICATING MACHINERY MANUFACTURERS

WATSON

SELF-POWERED SHAFTLESS TAKEUPS TYPE "V"

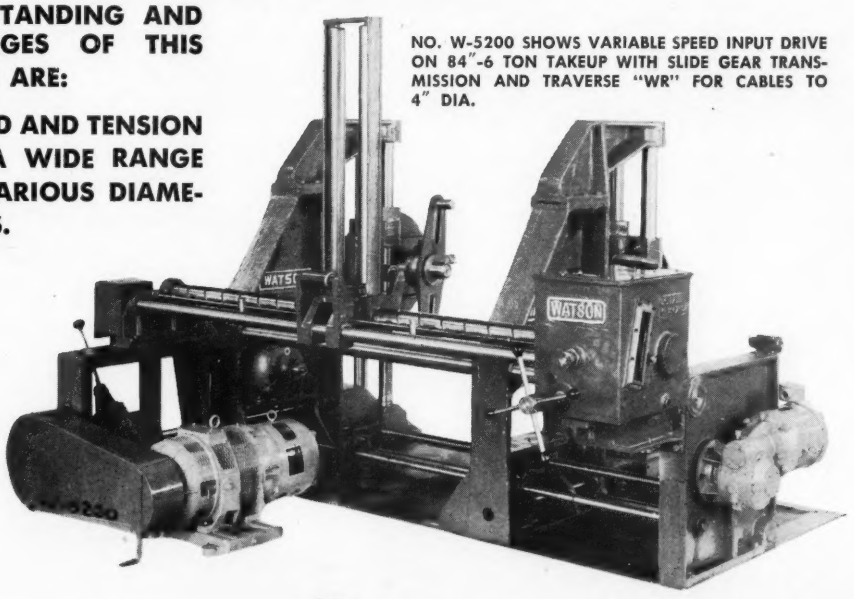
TAKEUPS OF THIS FOREMOST DESIGN, CAPABLE OF THE HEAVIEST DUTY, FURNISHED WITH A VARIABLE SPEED DRIVE MOTOR, MAKE THESE UNITS COMPLETELY INDEPENDENT OF IN-LINE EQUIPMENT AND ESPECIALLY SUITED FOR USE WITH LARGE EXTRUDING, LEAD SHEATHING AND TAPING MACHINES.

SOME OF THE OUTSTANDING AND NOTABLE ADVANTAGES OF THIS "SHAFTLESS" DESIGN ARE:

1—VERSATILITY—SPEED AND TENSION CONTROL OVER A WIDE RANGE WITH REELS OF VARIOUS DIAMETERS AND WIDTHS.

2—SAFETY — ELIMINATION OF ACCIDENTAL INJURY DUE TO HANDLING OF LARGE REEL SHAFTS.

NO. W-5200 SHOWS VARIABLE SPEED INPUT DRIVE ON 84"-6 TON TAKEUP WITH SLIDE GEAR TRANSMISSION AND TRAVERSE "WR" FOR CABLES TO 4" DIA.



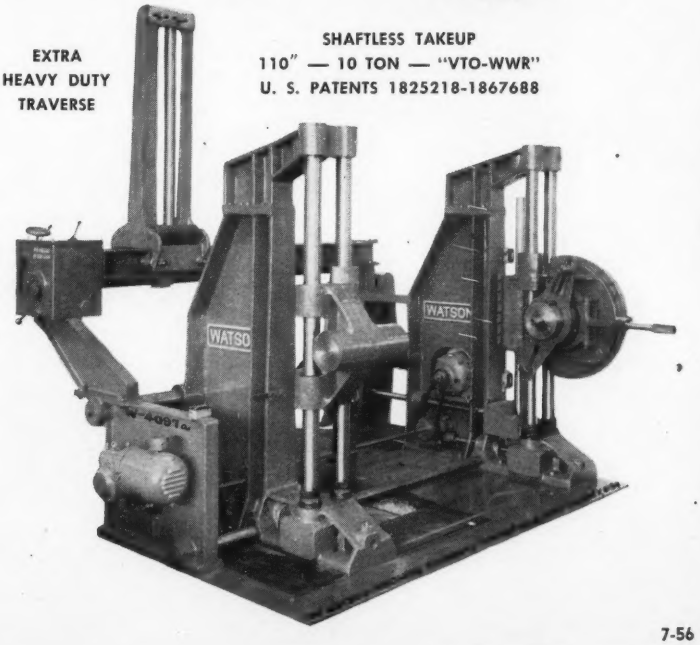
3—FULL MOTORIZATION—DRIVE, REEL LIFT AND FRAME SHIFT ARE ALL MOTOR DRIVEN.

4—EASE — ALL CONTROLS AND ADJUSTMENTS EFFECTED WITH A MINIMUM OF EFFORT.

5—RAPIDITY — LARGEST REELS EASILY AND RAPIDLY ENTERED AND DISCHARGED.

EXTRA HEAVY DUTY TRAVERSE

SHAFTLESS TAKEUP
110" — 10 TON — "VTO-WWR"
U. S. PATENTS 1825218-1867688



AVAILABLE IN 5 SIZES FOR REELS TO 120" DIA.

7-56

AGING

ALUMINIZING

ANNEALING

BILLET HEATING

BRAZING

BRIGHT ANNEALING

CARBON RESTORATION

CARBURIZING

CERAMIC DECORATING

DRAWING

ENAMELING

GALVANIZING

HARDENING

HOMOGENIZING

MALLEABLIZING

NORMALIZING

NITRIDING

SINTERING

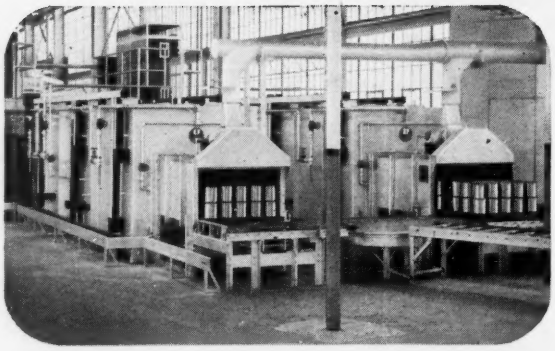
SOLUTION TREATING

STRESS RELIEVING

STRIP—ANY PROCESS

SPECIAL ATMOSPHERE TREATMENTS AND OTHER PROCESSING

EF gas - fired and electric furnaces are built in many sizes and types for bright annealing wire on spools or reels, in coils or strands—ferrous and non-ferrous, including stainless.



Clean annealing nickel-silver and other alloy wire in an EF gas fired radiant tube continous roller hearth furnace. Handles coils up to 30" in diameter.

EF PRODUCTION FURNACES

for these and other processes

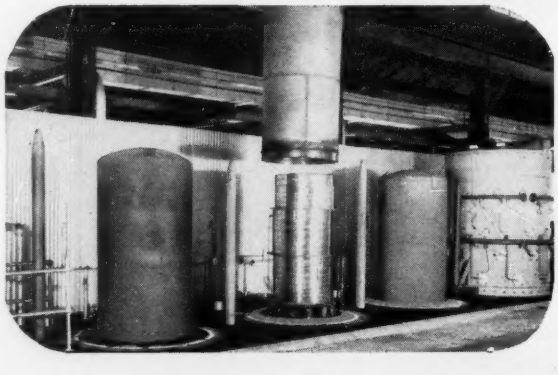
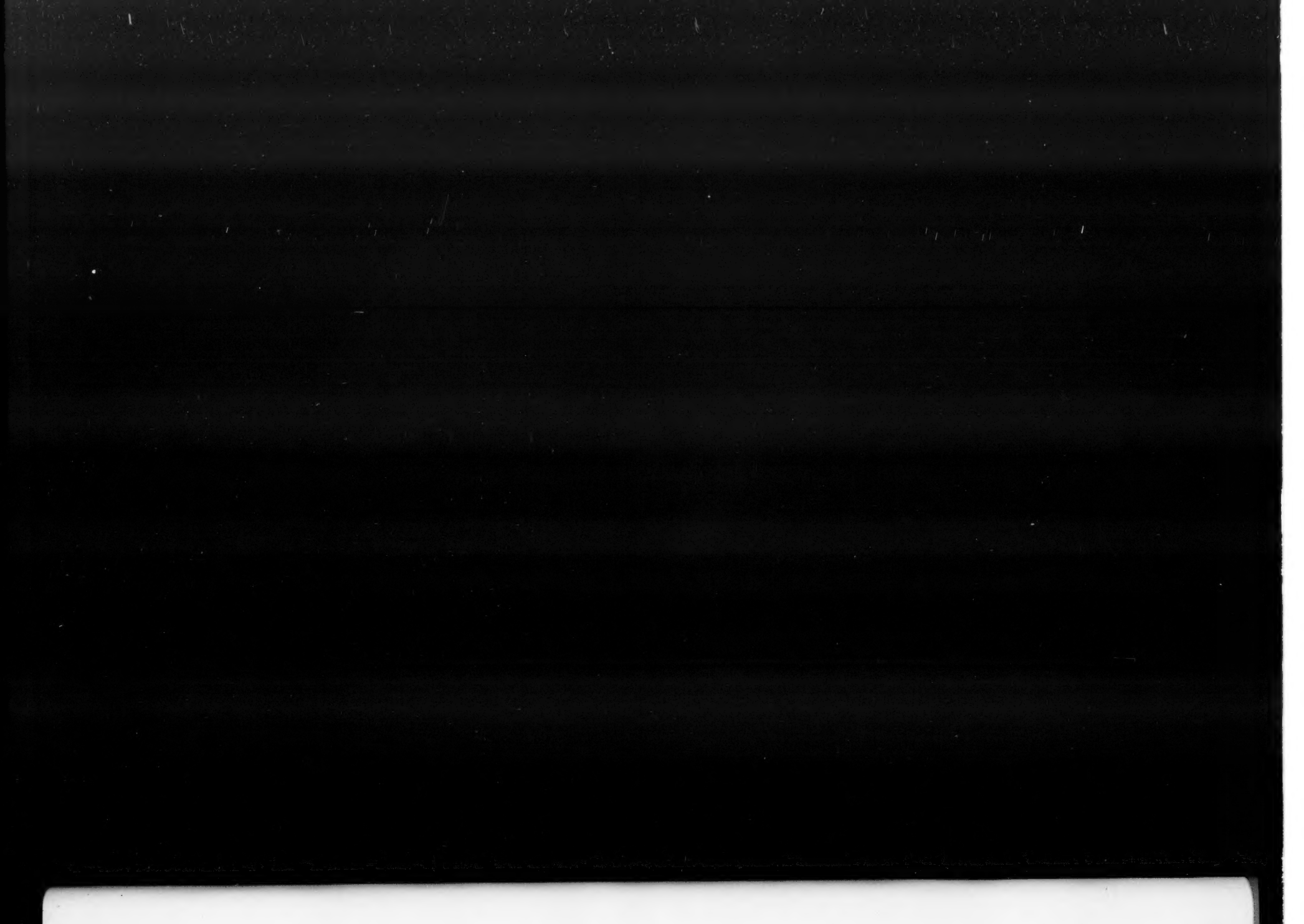
• Reflecting more than 30 years of continuous research, experience and outstanding engineering accomplishments, EF production furnaces combine high heating efficiency — accurate, automatically controlled cycles — high fuel economy—and produce products with uniform physicals and surface finish year after year.

For advanced engineering designs that minimize maintenance and produce high hourly outputs, turn your production furnace problems over to experienced EF furnace engineers — IT PAYS.

THE ELECTRIC FURNACE CO.

GAS FIRED, OIL FIRED AND ELECTRIC FURNACES FOR ANY PROCESS, PRODUCT OR PRODUCTION

Salem - Ohio

Canadian Associates • CANEFCO LIMITED • Toronto 1, Canada

EF gas fired and electric bell, pit and other batch and continuous type furnaces are available for normalizing rod, annealing wire, strip and other processes.